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SOME SPECIAL FEATURES IN THIS NUMBER.

A COMPLETE index of the contents of this issue will be found on page 116. This paragraph is intended simply to call attention to a few of the special features. Mr. Leo E. Miller, who accompanied Colonel Roosevelt on his South American explorations a year ago, describes and illustrates, on pages 62 to 65, the gathering of rubber as he saw it in Brazil and British Guiana.

Dirigibles and aeroplanes are playing a prominent part in the present war, and an authorative article, fully illustrated, on the method of testing balloon fabrics will be found on pages 69 to 72. Six pages, from 89 to 94, are devoted to rubber goods that have recently come on the market and to new machinery for use in rubber factories. The latest discoveries of the rubber chemists receive two pages—67 and 68. The papers read at the late London Rubber Conference are briefly described by a member of that body on pages 98 and 99.

The effect of the war on the rubber trade in England and on the Continent is a matter of supreme interest to American rubber manufacturers. The English situation is described by two resident correspondents on pages 95 to 97; while conditions in Germany are given in considerable detail on pages 101 and 102.

CRUDE RUBBER CONTRABAND.

THE status of crude rubber as viewed by the belligerents has undergone several changes since the beginning of hostilities. At first only tires, dirigibles, aeroplanes and fabrics employed in their manufacture were put on the contraband list. Then, late in September, the British Government added crude rubber to the list of conditional contrabands. That is, it could be exported to certain ports in Europe—those of France, Belgium, Russia, Spain and Portugal—but to no others. Early in October the French Government placed crude rubber among the absolute contraband articles, and later in the month the British Government practically made all plantation rubber contraband by decreeing that no shipments from the Far East plantations under British control should be made anywhere except to London. This was followed a few days ago, according to cables received in New York, by the prohibition of all exports of crude rubber from an English port. In other words, the British Government decreed that all rubber from British controlled plantations should go to England and stay there, at least for the present.

It was given out that the requirements of the allied armies would be sufficient to absorb practically the whole plantation production for the next six months. It was stated that the British and French military authorities would need a new equipment of tires for the quarter million motor transport vehicles now being used in the war, and that there would be a great demand for waterproof ground sheets for the troops; for rubber boots, to be used in digging trenches; for all kinds of surgical appliances, and for various other articles incident to military operations.

But will England really require for her own use and for that of the Allies all the plantation rubber which normally should be shipped during the next six months? According to estimates made earlier in the year, the plantation output for the next half year should amount to thirty-five thousand tons. Now, during the first six months of the present year England imported a little over thirty-five thousand tons and exported a little over twenty-nine thousand tons, retaining for her own manufacturing purposes less than seven thousand tons. In other words, during the first half of the present year England's consumption of crude rubber amounted to a little over a thousand tons per month; and she now practically announces that during the next six months her rubber consumption will amount to six thousand tons per month,

or six times what it was before the beginning of the war. Obviously, this will hardly be the case, for while the demands made by the British and allied armies for rubber goods will be large, the general consumption by the people of England, France and Belgium will assuredly be materially decreased.

The probability is that the British Government does not expect to need the entire plantation product for the next six months, but purposes to be in a position to let none of this rubber go through any channels where it may ultimately help the enemy. It is quite likely that plantation rubber will be permitted to leave London for New York where it is accompanied by satisfactory guarantees that it will not later find its way, in the form of tires or other military equipment, to the armies of the two Kaisers.

If London should absolutely retain every ton of plantation rubber during the next six months, compelling the United States to depend entirely upon shipments from Para, the supply would certainly be scant, for during the six months beginning with November, 1913, the receipts of South American rubber in the United States amounted to less than twelve thousand tons. There is no reason to believe that the receipts for the next six months will be any greater than they were a year ago. But the situation even without plantation rubber would not be so desperate as it may appear, for there is reclaimed rubber —an ever present help in time of trouble.

SELLING TO BELLIGERENTS VIOLATES NO LAW.

THERE has been so much misunderstanding among American exporters and manufacturers regarding the sale of our merchandise to the belligerent nations, and so many appeals have been made to the State Department for information as to whether such sales were in violation of our neutrality, that the Department has felt it necessary to issue a statement covering the situation. This has been done by Assistant Secretary Lansing, and done so clearly and explicitly that there would seem to be no further excuse for any misconception. It is only necessary to cite two short paragraphs from his statement, which fairly well cover the whole ground. They are as follows:

"In the first place, it should be understood that, generally speaking, a citizen of the United States can sell to a belligerent Government or its agent any article of commerce which he pleases. He is not prohibited from doing this by any rule of international law, by any treaty provision or by any statute of the United States. It makes no difference whether the articles sold are exclusively for war purposes, such as firearms, explosives, etc., or are foodstuffs, clothing, horses, etc., for the use of the army or navy of the belligerent.

"Neither the President nor any executive department of the Government possesses the legal authority to interfere in any way with trade between the people of this country and the territory of a belligerent."

Accordingly, any American rubber manufacturer can take all the orders he can get for anything he produces that may be wanted by any of the belligerent countries, whether tires, boots, shoes, coats, hospital accessories or any other kinds of rubber manufacture. The only question he need ask himself, to borrow a current Americanism, is this,—Can he put them across? It is obvious that if his exports are going to the Allies, he runs no very great hazard. If they are intended for Germany or Austria, under present conditions that's another matter.

THE COTTON CRISIS.

IT may be stated at the start that the cotton crisis, while by no means past, is not as acute as it was a short time ago. The assurance given a few days ago by the British Government that there will be no interference with cotton shipments from American ports to Germany or Austria had the instant effect of stimulating exports of this staple from this country. On the receipt of this assurance cotton exports, which had languished ever since the beginning of the war, immediately jumped from a few thousand bales a day up to forty thousand bales, with a probability that equally large shipments will continue. For the first time since the outbreak of the war, orders were received last week from Germany, and shipments began immediately to be made to that country. Simultaneously with this welcome change in the situation there appeared excellent promise of the success of the Bankers Pool, which expects to make one hundred and thirty-five million dollars available for the assistance of the planters. So, while the cotton burden has not been lifted, it assuredly has been materially lightened.

The war, which brought injury to business in this country generally, played particular havoc with the cotton industry. The present crop amounts to fifteen million bales. Normally, ten million bales would have been shipped abroad, but during the first ten weeks after the beginning of hostilities it looked as if barely a million bales would find foreign purchasers, leaving the planters

with a vast aggregate of nine million bales, or nearly two-thirds of the entire crop, unsalable in their warehouses. It is hardly to be wondered at, under these conditions, that the southern contingent at Washington should seek government relief. It will stand out as one of the most notable achievements of the recent Congress that with so much sympathy for the southern situation it withstood the great temptation of shifting the planters' burden to the shoulders of the Government—which certainly would have been a very bad precedent in paternalism. Further attempts by the southern members of the Senate and the House may be made for government assistance, but every bale that goes abroad from our ports during the next few weeks will make this attack on the Federal Treasury less likely to succeed.

Last year Germany bought 2,785,000 bales of our cotton, with a value of $182,000,000. It is not to be expected, of course, that there will be any such demand on the part of that country this year, but if Germany were to take one-half of last year's purchases, and the other European countries follow in like proportion, the planters' problem, if not solved, would certainly be much nearer solution.

But the great lesson which the South must learn from its present condition is the necessity of curtailing its cotton proclivities, at least for the next year or two, until demand has overtaken supply. Too much of a good thing is a bad thing. No section can enjoy robust health when its functions are deranged by a great mass of undigested material, be it cotton or what not.

RUBBER PROPAGANDA.

WHEN crude rubber is scarce and high, manufacturers seek substitutes and new compounds. When it is plentiful and low, producers talk restriction of product and new uses. They also become rubber educators. The planters in the Middle East, for example, are considering extensive missionary work among rubber manufacturers to show how much superior plantation rubber is to any other. The producers up the Amazon also plan to institute a "propaganda" among manufacturers to impress upon them the fact that Brazilian Para is best and should therefore always have the preference. Indeed the South American boomers go further. They seriously consider addressing the great consuming public and urging them to demand that what they buy be made of "the best rubber in the world."

No doubt these missionaries will be welcomed, listened to respectfully and given every opportunity to demonstrate their claims, but it is doubtful if these efforts will increase the use of one or the other sorts in the slightest degree. The only way that the planters can eliminate wild rubber is to produce something better as well as cheaper. The Brazilians can drive out plantation rubber only by producing wild rubber cheaper as well as better. Samples, circulars, propaganda, missionary visits, will not accomplish half as much as even coagulation, clean smoking, and standard brands.

AT A MEETING OF THE MERCHANTS' ASSOCIATION of New York, held October 15, the manager of the foreign trade department of the National City Bank of that city, described the steps that had been taken by his institution toward the establshment of branch banks in South America. He stated that the staff for the bank to be established in Buenos Aires had already been selected and was on its way to that city; that suitable quarters had been secured, and that the bank would be in active operation during the present month. This is the first American bank ever established in any foreign country.

Few people outside of banking and exporting circles have any appreciation of the significance of this new enterprise and its particular significance as pertaining to South America. The great obstacle in the way of increased commerce between North and South America has been the necessity of financing all such operations through European banks. This necessity will now be entirely removed.

FOR FIFTY YEARS THE CHAMBER OF COMMERCE OF NEW YORK has enjoyed an unbroken series of successful annual banquets. This year, because of the great war and the widespread distress and suffering, there is to be none. Members of other prominent associations have taken the same action. This, of course, entails self denial on the part of feasters, orators and listeners, but as a practical expression of sympathy it is excellent. For America to feast and rejoice while Europe starves and mourns might smack of callousness. The Rubber Club of America has been canvassed by its secretary for an expression of opinion regarding its banquet slated for January 5 next.

The members were asked to state their preference, whether to hold the dinner or to omit it and donate the amount that the dinner would have cost to the American Red Cross. Responses have not yet been received from the entire membership, but nearly two-thirds have replied, and of that number the sentiment is so overwhelming in favor of omitting the dinner and contributing the amount to the Red Cross and other humane agencies which are seeking to mitigate the horrors of the war in Europe, that it has been definitely determined to abandon the dinner.

Among the Rubber Collectors of the Remote South American Hinterland.

By Leo E. Miller, American Museum of Natural History

[Mr. Miller has not only devoted a great deal of time to exploration in South America in the interest of the American Museum of Natural History, of New York, but he was one of Colonel Roosevelt's famous party that discovered the "River of Doubt." His description of rubber gathering on the Upper Orinoco in Venezuela and along the Machado in Brazil—both visited by him last year—makes a valuable and interesting addition to the contributions on this subject which have already appeared in these columns.]

NEARLY four years of constant exploration and travel in the wilds of South America have taken me into many out-of-the-way places and little-known parts of that continent. Invariably my mission has been a scientific one—to study the fauna and the flora of the region traversed, and a good deal of my time has been spent in the haunts of rubber gatherers—those pioneers of the tropics whose frail crafts are constantly pushing beyond the utmost frontiers of civilization in quest of new fields to conquer, and braving a hundred dangers in their opening up of the dark and silent waterways in the interior of the great, mysterious land. In recent years much has been written concerning the conditions attendant upon the exploiting of rubber lands in parts of South America, some of which is true, a great deal of which is untrue. It is one of the objects of this paper to bring to light some of the interesting phases of the life that is lived in the eternal solitudes of the boundless forests with which I became so intimately acquainted but of which comparatively little is known in general.

SMOKING HEVEA BRASILIENSIS, RIO MACHADO.

It has rarely been my privilege to penetrate into more primitive regions than the headwaters of the Orinoco, or into a land of greater promise than is found along the upper reaches of the Gy Paraná, better known as the Rio Machado. The Gy Paraná, it might be well to state, is one of the largest affluents of the Madeira. For many years its lower course has been known to adventurous seekers of orchids, rubber and other natural products, all of which have been yielded in abundance; but it is only within the last few years that the course of the upper river has been thrown open to navigation of any kind. Even now only an occasional dugout ventures beyond the zone of pestilence and rapids into the land of hostile Indian tribes; but the way has nevertheless been opened, and within a comparatively short time this region will be giving up its fair quota of the natural riches that lie hidden in the vast, untrodden wilderness.

The Orinoco is, no doubt, better known by name than the Machado, and at present it must suffice to give merely a vague idea of the remoteness of its hinterlands by citing that it requires approximately three months of travel from Ciudad Bolivar, two hundred and forty miles from the mouth of the mighty river, to reach the Rapids of Guajaribo, far above the mouth of the Cassiquaire; beyond that point the river is wholly unknown.

On February 28, 1913, I stopped at the *barraca* of one Senor Paraquete, far up on the Orinoco, beyond the mouth of the Ventuari. The main building stood on a high bank thirty feet above the river, and was occupied by Sr. Paraquete and his assistants. Several large rooms were used as a *venta* or store and a fair stock of provisions and merchandise was carried. On one side was the camp of the full-blooded Indian employes, Maquiritares from the regions of the Cunacunuma, who lived in small palm-leaf huts with their families. On the other side stood long, thatched buildings, open all around, with scores of hammocks strung from the posts and beams; these were the quarters of the natives—Venezuelans and Zambos. In the rear, and some distance away, stood the smoke-houses, completely enclosed with palm leaves except for one small door opening. Trails led into the forest from a number of points, and numerous dugouts tied to the landing indicated that work was also prosecuted on the other side of the river. Often, especially in the case of the Indians, man and wife worked together. Old-fashioned methods are employed entirely. The trees are girded with strips of palm pith at the base which intercept the latex and deflect it into a folded leaf placed underneath. This system is rather wasteful and injurious to the trees. There is no fixed rule or custom for tapping the trees, the men hacking into the bark at random, but occasionally the herring-bone pattern of cut is used. Each man has two routes, and endeavors to have from three to five hundred trees on each, seldom more, often less, according to the abundance of the rubber trees in the locality. He takes one trail one day, and the other the next, thus

permitting the trees to rest on alternate days. If it rains the day's catch is spoilt, as latex mixed with water is worthless. The season of 1913 had been a poor one; at the beginning the flow was abundant and of good quality, one hundred pounds of latex yielding sixty pounds of rubber. That was in December; by May five hundred trees were producing only twenty-five pounds of milk, and this was of such poor quality that it contained but 40 per cent. of rubber. Of course, the trees had become weakened as the season advanced, which also accounts for the decrease in yield, but the main trouble had been almost constant rains long before the regular wet season. The milk was weighed as brought in by each man at midday and credited to his account; in the afternoon the whole force repaired to the smoke-house to work up the day's catch. A kind of wood called Mazarandul is used exclusively for the smudge; it is of a deep reddish color and grows plentifully along the river.

HUGE BALLS OF CRUDE RUBBER SPREAD OUT TO DRY ON THE UPPER MACHADO.

The cost of transportation between the Upper Orinoco and Ciudad Bolivar is enormous. In the first place, the distance is very great and the river is full of rapids, necessitating long overland portages; all provisions have to be brought up, and the crude product has to be taken back down; there is always a great loss both ways from theft and wreckage, and as there is no regular system of navigation beyond the mouth of the Apure, the difficulties encountered in securing boats and crews are tremendous.

The headquarters of the Orinoco rubber gatherers is San Fernando de Atabapo, containing about a hundred huts, which is the only settlement above the Cataract of Maipures. In February the town was almost deserted. In May it was full of life. Numbers of people were arriving daily; there was dancing and gaming, eating and drinking, day and night, and many a man spent his entire season's earnings in a few evenings. The sight was not unlike that formerly seen in the western mining camps of our own country. Representatives of the big houses in Ciudad Bolivar, which had made advances to the concessioners, were there to see that they received all the rubber collected by their debtors. The governor of the department (Alto Orinoco) made his home further down the river, on the Rio Cataniapo, near the Rapids of Atures. He explained that it was "healthier" on the Cataniapo than at San Fernando, and I subsequently learned just what he meant; but more of this later. All goods going up the river were stopped at his domicile, examined and an *impuesto* collected. There was also a good deal of pilfering of boxes and bales by the light-handed inspectors. Another tax was imposed on all rubber leaving the territory. No wonder that there was great dissatisfaction with the existing regime, and a few days after I left San Fernando the injured parties took a terrible revenge. The governor (Gen. Roberto Pulido) had come up from the Cataniapo and had decreed that not one ounce of rubber was to leave the district until the tax had been paid in advance. This tax was looked upon as robbery, pure and simple, and it was said, was illegally imposed by the governor for the benefit of his own pocket. So one night, as Governor Pulido lay ill with fever, his room was entered and he was killed and horribly mutilated. At the same time all the other government officials in the town were treated in like manner and in the riot that ensued the greater part of the male population of San Fernando was exterminated. It was said that Indians had made the attack, but probably the real perpetrators of the deed were a group of the owners of concessions in that district who objected to what they called open robbery. Personally, I was treated most courteously by Governor Pulido, and he helped in many ways to further my mission. However, there seems little doubt that he drove his methods of extortion too far; this was apparent even in the postoffice, where postage stamps were sold at twice their face value, and if anyone refused to buy them but used stamps purchased elsewhere, there were reasons for believing that the letters never left the building.

The difficulties of travel on the Machado are even greater than on the Orinoco. In eight days we came down a stretch of water that requires three or four months to ascend. The current is terrific; in a large *batelão* we could easily travel eighty kilometers a day. Rapids are numerous, those of San Vicente being the most dangerous. Just before my visit a *batelão* with a crew of thirty-one had gone over, of whom twenty-seven were never seen again. Steam launches, privately owned, now ply between some of the worst rapids and greatly facilitate travel. By their use we covered in one day a distance that had formerly required five months, as the boats had to be dragged around long and difficult portages.

On the Machado the rubber camps are not abandoned during the rainy season but as the floods advance stand isolated above the muddy water, crowded with their human inhabitants, chickens, pigs and dogs. Many of the houses are built on piles, and the water comes up until it touches the floor. As may be expected, the interior is always damp and ill-smelling. Cooking and washing are done on the front porch and canoes are tied to the posts in readiness for instant flight if necessary, or to use in gathering wood or visiting the neighbors. Behind the huts, banana palms bend and bow gracefully as the current tugs at their bases, and a few vultures are usually perched on the roof. The whole presents a scene of devastation, but the people seem perfectly happy. If there is any high country within reach, the men may cut timber and collect copaiba oil or hunt for various kinds of gums. The gathering of Brazil nuts forms one of the chief occupations, and thousands of tons are brought down the various rivers annually. Canoes are hollowed out, palm leaves and poles for new huts are brought in, and every-

thing is made ship-shape so that there may be no delay in beginning the rubber season when the water recedes. There are invariably a few men in each camp who are famed for their prowess with gun and harpoon, and it has been my pleasure on several occasions to accompany these nimrods of the tropical jungles on their long rambles in search of meat.

At Calama on the Madeira, just opposite the mouth of the Machado, are located the headquarters of one of the best organized rubber companies I have found anywhere during my four years of explorations. It is the establishment of Asensi & Co., who started business eighteen years ago with eight men; today they employ 3,500 men all told, and produce 700 tons of rubber annually besides large quantities of copaiba oil, tobacco, lumber and other natural products. Their concessions cover the entire country bordering the Machado and Commemoracion, extending inland a distance of thirty kilometers on each side of the water. In addition, the concern controls large tracts on the Madeira. The buildings at Calama are large and comfortable, and besides living quarters include modernly equipped offices, store-rooms, warehouses, carpenter and machine shops and cattle barns. A resident physician is retained for the care of the employes, who are brought down from the camps and cared for when in need of treatment. Each department is in charge of competent officials, and the spirit of co-operation and efficiency is plainly visible even to the casual observer. All steamers plying on the Madeira call at this port, while numbers of the fleet of privately owned launches and other craft are arriving and departing at all hours of the day and night. Provisions in enormous quantities are sent up-river. To reach the farthest outpost, each parcel has to be carried on four different launches, twice on mule-back, eight times on men's backs and five times in canoes and batelaos, a form of transportation at once difficult and time-absorbing.

In the working camps conditions are better than in many other regions. A rigid set of rules has been formed regulating the tapping of rubber trees, with which all tappers are compelled to comply in bleeding the precious *Hevea Brasiliensis*. At first a long-handled, narrow-bladed ax is used, which enables the men to make an incision at twice their height from the ground. No tree is touched unless it has a circumference of at least four spans (all measurements are made with the hands, for convenience) and all cuts must be two spans apart, so that if a tree has a circumference of twelve spans, a circle of six spans is made each day. At first these cuts are of too great height above the ground to permit of cups being placed to catch the latex, but they are necessary to stimulate the flow on the sap, which nature intends to cleanse and close the wound so that it may readily heal. To faciliate the healing process the cut is not made at right angles with the tree, but slantingly. Each day a new ring of cuts is made one span below that of the previous day, so that within a week after starting a tree the cuts are within reach and the flow of milk is sufficient to be collected. A small tin cup is pushed into the bark under each incision, into which the sap flows. A short-handled ax is now used and the rows of cuts, one beneath the other, are continued until the ground is reached, when new ones are started just halfway between the old ones, and this is continued indefinitely so that the original openings are not reached again until many years later when they have of course completely healed. The collector starts out in the early morning making the cuts and placing the cups, then he retraces his steps and collects the catch. Should the day be very windy he will probably find that instead of a

FLOATING RUBBER RAFTS DOWN THE RIO MACHADO.

liquid each cup will contain a neat little white cake of cheese-like consistency; the natives attribute this coagulation of the latex to the action of the wind, but the real cause may be traced to the multitude of small particles of bark and twigs that have fallen into the cup; if the cake be cut open, a great many impurities will be found imbedded in the interior like raisins in a muffin.

Great care must be exercised in smoking the latex of *Hevea*. If allowed to stand too long, the finished product will contain numerous small holes, like a cheese, and will be graded as of inferior quality. If prepared while perfectly fresh, it is smooth and firm and of the best quality. In preparing rubber in the old way—that is by pouring the latex over a paddle and revolving it in a column of smoke until a ball weighing several hundred pounds had been formed—there was always a considerable amount of loss to the producers, and for the following reason,—It required the run of many days to produce a ball of this size with the result that on some days the latex was prepared properly and a perfect layer was added to the rapidly growing ball, while on other days the layer added was of a porous consistency. When the ball was finished and cut open for inspection the two qualities showed plainly and the whole ball, including the first-class layers, was classed as *entre-fina* or second quality.

INTERIOR OF RUBBER CAMP PARAQUETTE, VENEZUELA.

The Asensi company has evolved a method of working up the latex that eliminates all this loss. Instead of the paddle, a wood cylinder nine or ten inches in diameter and a foot wide is used; there are low flanges on the ends, and the whole resembles a shallow spool. After having been smoked the cylindrical piece of rubber is slipped off the form and cut open, resulting in a flat slab. This process possesses many advantages. Each slab represents one day's work for one man; the quality of the rubber is immediately visible, and the surface presented to the smoke is so large that it takes less time to prepare the latex. The flat slabs pack easily and save all the space that is lost in packing the large, unwieldy balls; there is no possibility of mixing the two qualities, and the slabs dry perfectly and cut down the dead weight of water. In smoking the latex of *Hevea Brasiliensis* the nuts of *Attalea Excelsa* are used exclusively for the smudge.

Although there is no scarcity of *Hevea, Castilloa* is not overlooked. The trees are cut down and a deep spiral is cut in the trunk; basins are set underneath to catch the sap. That which adheres to the trunk is pulled off in long strips and wound into balls; the milk caught in the basins is coagulated by dropping into it the juice of a vine called "batatarama" and a small quantity of common soap.*

On the Machado I saw an ingenious way of transporting rubber down river from the camps in the interior. Formerly boats had been used entirely for this purpose, which method incurred heavy expense on account of the great weight of rubber. Large crews had, of course, to be maintained for the purpose of looking after the boats, to say nothing of the cost of the boats themselves; now, all this is changed. The rubber is rafted down the stream. A strong rope is passed through the hole in the center of each *bolhon* and the ends are then tied together so that they resemble a string of massive beads. A number of these strings are placed one within the other as shown in the photograph. Then a single ball is inserted in the center, with a flag stuck in it, and the "raft" is cut loose. On it floats with the current, slowly where the water is quiet, and dashing madly through gorges and over rapids. Two men follow leisurely in a small dugout, always keeping the bobbing flag in sight. At night they paddle up to the raft and tie a lantern to the flagpole; then they follow the light. When the floating mass reaches the end of the journey ropes are fastened to it and it is moored at the landing, fished out and prepared for the steamer.

Taken altogether, the life of the rubber collector is one of hardship and deprivations, but it is not without its bright side, and as a general rule is not nearly so bad as often represented. The care-free life and the charm of the boundless wilderness act as a powerful magnet that attracts, year after year, men who know exactly what to expect. We must also not forget that usually we are judging according to our own standards of comfort and luxury, conditions which do not exist in the regions in question and of which nothing is even known. Life at its best among these primitive folk appears decidedly uninviting to us, but not to them. They are living the life of their fathers, the life that was intended for them and for which they are adapted, and separated from which there would be only discontent and unhappiness.

*A complete collection of the various qualities of Machado rubber and the utensils used in its collection and manufacture were presented to the American Museum by Asensi & Co.; it is now on exhibition in the museum in the Bronx Botanical Gardens.

DR. MANUEL LOBATO RESIGNS EDITORSHIP OF "FOLHA DO NORTE."

The "Folha do Norte" of September 8 contained an announcement of the resignation by Dr. Manuel Lobato, of the editorship of that journal, and an appreciatory notice of his services. Dr. Lobato has also resigned the post he had occupied in the municipality of Para. His name will be recalled in connection with the New York Rubber Exposition of 1912.

PLANS APPROVED FOR NEW BOLSA BUILDING AT BUENOS AIRES.

Plans for the new Bolsa building, to be erected in Buenos Aires, at the corner of Sarmiento and Paseo de Julio, have been approved by the municipality of the city. These plans call for a building of greater height than the regulations of the city permit, but in view of the public nature of the institution an exception is being made.

THE INTERCONTINENTAL COMPANY'S ANNUAL REPORT.

THE annual report of the Intercontinental Rubber Co., issued on October 5 and covering the year ending July 31 last, states that the company's works at Torreon, Mexico, have been completely shut down during the entire twelve months. The company had some stock on hand at the beginning of the year, which it succeeded in shipping to New York early in 1914, but only a small quantity of this guayule was sold, owing to the low prices. Some sales at better prices were made immediately after the outbreak of the war, but these sales do not appear, of course, in the present report.

The Cedros ranch, owned by a subsidiary of the company, had to be abandoned and left to the mercy of the rebels during the whole year, so that nothing was received from this source.

Two dividends were paid on preferred stock during the year, the last being December 1, 1913, at which date all the outstanding preferred stock was retired for cash, leaving only common stock outstanding at the present time. The company's balance sheet is given below:

BALANCE SHEET—JULY 31, 1914.

ASSETS.

Investments in stock of merged and subsidiary companies:		
By cash	$2,115,321.59	
By stock issues	28,198,575.30	
		$30,313,896.89
Patents (exclusive of subsidiary companies)		15,141.77
Accounts and notes receivable, etc.:		
Advances to subsidiary companies	$661,252.09	
Sundry accounts	16,273.51	
		677,525.60
Investment securities (market value)		1,065,000.00
Cash		388,573.44
		$32,460,137.70

LIABILITIES.

Capital stock, common		$29,031,000.00
Accounts payable, taxes accrued, etc.:		
Due to subsidiary companies	$104,401.65	
Sundry accounts	4,791.52	
		109,193.17
Reserve accounts		1,124,103.58
Surplus (as below)		2,195,840.95
		$32,460,137.70

SURPLUS ACCOUNT.

Surplus, August 1, 1913		$2,197,810.11
Net income from securities, interest, etc. (after adjustment of investment securities to current market value)	$82,679.19	
Sundry income	3,991.72	
	$86,670.91	
Less administration and general expenses	35,681.74	
		50,989.17
		$2,248,799.28
Charges against surplus:		
Dividends paid on preferred stock up to Dec. 1, 1913.	$36,458.33	
Reserve against loans to subsidiary companies	16,500.00	
		52,958.33
Surplus, July 31, 1914		$2,195,840.95

AUTOMOBILE EXPORTS FOR FISCAL YEAR 1914.

ACCORDING to a summary issued by the Department of Commerce, Washington, the aggregate United States exports of automobiles and accessories for the fiscal year ending June 30, 1914, amounted to about 40 million dollars. This amount was apparently composed as follows:

	Number.	Value.
Commercial motor vehicles	784	$1,181,611
Passenger automobiles	29,352	26,616,031
Parts (exclusive of tires) and engines	....	6,787,575
		$34,585,217
Tires and engines (estimated)	....	5,000,000
		$39,585,217

The analysis of the distribution given below shows that Europe and North America took, respectively, 12¼ and 10¾ million dollars' worth of automobiles and parts, about two-thirds of the grand total of 35 million shown under those heads. Oceania took about 5 million dollars' worth, thus leaving only about 7 million for the remainder of the world, or about 20 per cent. of the aggregate shown by Table A given below.

TABLE A—AUTOMOBILE EXPORTS FOR FISCAL YEAR 1914.

	Commercial motor vehicles.		Passenger automobiles.		Parts.	Total
	No.	Value.	No.	Value.	Value.	Value.
Europe	249	$248,716	13,108	$10,168,218	$1,830,560	$12,247,494
North America	298	558,413	5,190	6,280,042	3,847,616	10,686,071
South America	79	130,811	1,906	1,808,401	296,306	2,235,518
Asia	30	55,658	1,408	1,206,031	144,017	1,405,706
Oceania	113	171,407	4,833	4,338,977	334,956	4,845,340
Africa	15	16,606	1,861	1,591,294	170,777	1,778,677
Hawaii	..	.....	701	841,458	85,813	927,271
Porto Rico	..	.....	291	320,680	70,025	390,705
Alaska	..	.....	54	60,930	7,505	68,435
	784	$1,181,611	29,352	$26,616,031	$6,787,575	$34,585,217

AUTOMOBILES AND PARTS EXPORTED TO BELLIGERENT NATIONS.

Aggregate exports to Europe were $12,247,494, of which the value of nearly eleven million dollars was shipped to the nations which have since become belligerents, in the following proportions:

TABLE B—AUTOMOBILE EXPORTS FOR FISCAL YEAR 1914 TO NATIONS NOW BELLIGERENT.

	Commercial motor vehicles.		Passenger automobiles.		Parts.	Total
	No.	Value.	No.	Value.	Value.	Value.
England	203	$189,099	7,017	$5,662,435	$1,305,657	$7,157,191
Germany	24	18,462	1,411	1,040,787	213,351	1,272,606
France	2	5,070	1,427	919,060	179,351	1,103,481
Russia	2	5,322	926	898,458	14,079	917,859
Austria-Hungary	3	7,455	314	190,199	5,198	202,852
Belgium	..	.....	244	139,681	20,978	160,659
Belligerent nations.	234	$225,408	11,339	$8,850,620	$1,738,614	$10,814,648
Other European nations	15	23,308	1,769	1,317,598	91,946	1,432,846
Grand total Europe.	249	$248,716	13,108	$10,168,218	$1,830,560	$12,247,494

Thus about seven-eighths of the United States exports of automobiles and parts for the fiscal year 1914 were to nations now at war.

Most interest attaches at present to the South American market, as being practically the only large outlet free from any connection with present or prospective hostilities.

TABLE C—AUTOMOBILE EXPORTS TO SOUTH AMERICA (FISCAL YEAR 1914).

	Commercial motor vehicles.		Passenger automobiles.		Parts.	Total
	No.	Value.	No.	Value.	Value.	Value.
Argentina	48	$65,225	940	$963,586	$92,633	$1,121,444
Brazil	13	20,449	299	264,992	84,602	370,043
Chile	2	10,743	195	160,194	22,405	193,342
Uruguay	1	865	183	167,269	21,401	189,535
Venezuela	12	28,228	126	102,073	26,286	166,587
Colombia	..	.....	79	69,620	19,970	89,590
Peru	3	5,301	36	31,362	5,982	42,645
Ecuador	..	.....	21	21,229	6,324	27,553
Bolivia	..	.....	4	12,764	1,209	13,973
British Guiana	..	.....	16	11,364	4,583	15,947
Dutch Guiana	..	.....	7	3,948	911	4,859
	79	$130,811	1,906	$1,808,401	$296,306	$2,235,518

What the Rubber Chemists Are Doing.

SYNTHETIC RUBBER.

IN the September number of this journal an article appeared entitled "War Prices Will Start Synthesists Again." While there are no direct results in this line from the war, yet quite a little has been done lately, and the remarks of Sir William Crooks a short while ago in his presidential address, delivered before the Society of Chemical Industry, show that this eminent authority recognizes the value of the scientific work done in this line. Dr. Crooks said in part: "Recent work on the synthesis of rubber has attracted much attention and notable advances have been made. As long ago as 1882 Tilden noticed that isoprene was converted into rubber by certain chemical reagents; ten years later he showed that this product was capable of vulcanization. Subsequent work led to the recognition of the fact that most substances containing a conjugated double linkage tend to polymerize, the polymers ranging from sticky substances through well-defined rubbers to hard resins. Polymerization may be spontaneous or it may be brought about by reagents, acids or alkalies, by heat or by sunlight."

In 1908, C. Harries and F. E. Matthews simultaneously discovered that metallic sodium is an excellent reagent for the polymerization of isoprene. The action is practically quantitative and not affected by impurities. Moreover, it takes place in the cold or by only moderate heating.

Professor Harries showed that a superior product could be obtained by the polymerization of butadiene. Research showed that isoamyl-alcohol obtained from fusel oil was a most suitable material to work on. By means of dry hydrochloric acid gas it was converted into chloride, then chlorinated to give the double chloride, from which the hydrochloric acid was eliminated by passing over hot soda lime. The isoprene so formed was then sealed up with 3 per cent. thin sodium wire and heated for several days to 60 degrees. The dark brown product thus formed was treated with acetone to precipitate the rubber. To obtain the fusel oil Fernbach has worked out a new process of fermentation starting with starch.

Holt has recently made some valuable discoveries relating to the manufacture of isoprene from the pentanes found in petroleum oil, and the preparation of butadiene from benzine or phenol, tetra hydro-benzine being formed as an intermediate product. He has also observed that when isoprene is treated with sodium in an atmosphere of carbonic acid gas it gives quite different products from those obtained by the same action in air.

Recent work shows that all synthetic caoutchoucs differ chemically from the natural rubber. Physically they are only equal to medium grade natural rubbers.

The above indicates that the most eminent chemists think commercial synthetic rubber within the range of probability, though it has not yet arrived.

TWO PATENTS CONTROLLING THE USE OF ANILINE DYES IN RUBBER.

On October 13, 1914, the United States Patent Office issued two patents covering the use of aniline dyes in any rubber compound which is to be afterwards hot cured. The first of these, No. 1,113,614, is issued to Kurt Gotleib, and the second, No. 1,113,759, is issued to Rudolph Ditmar, both of whom assigned their patents to the Bayer Co., of Elberfeld.

It is rather curious that these two patents should be identical in wording throughout except in mentioning different dyes, and that both should be issued while one controls the other. One covers organic dyes and the other organic vat dyes.

In THE INDIA RUBBER WORLD of February last mention was made of some work contributed by Ditmar on the use of dyes of this class which these patents now cover. Should these claims be upheld they would cover the entire field of the use of organic dyes which can be mixed in while compounding and will stand the vulcanizing temperature, and no colored rubber made in this way could be put on the market without the consent of the patentees. It would appear, however, that the use of these dyes in this way has been known before.

Referring to the 1909 Edition of Pearson's "Crude Rubber and Compounding Ingredients" we find on page 173 the following: "These aniline colors being soluble in benzine can be mixed right with the india rubber. If the product be cured in open steam heat with sulphur some curious effects are likely to be obtained." This certainly discloses a method of mixing organic dyes and sulphur with rubber and curing with open steam heat.

SOME OTHER RUBBER PATENTS.

United States Patent No. 1,113,630 has been issued to Fritz Hoffman, who assigns to the Bayer Co., of Elberfeld, This claims the production of caoutchouc by polymerizing butadiene with urea.

David Spence and William F. Russell have just been granted United States Patent No. 1,112,938 which claims the use of metallic or caustic alkali metals for improving the qualities of low grade rubbers. The patent is assigned to the Goodrich company. This corresponds to the British patent No. 17,667 for the same thing.

The use of sodium or other alkaline metal for the polymerization of isoprene according to the Harries method is of course well known, but it has hitherto not been applied to the improvement of low grade natural rubbers. The use of an alkaline earth has been proposed many times for deresinating low grade rubbers and it will dissolve many resins.

The use of the metals or their derivatives is also claimed to improve reclaimed rubber. Of course it would not seem that the use of caustic soda on a rubber reclaimed by the alkali process could have any further effect than the alkali with which it was reclaimed, but the use of metallic soda might affect it favorably. With the increasing production of plantation rubber the low grades and their improvement will become of less importance.

GERMAN RUBBER CHEMIST ARRESTED IN RUSSIA.

Like all other "hostile aliens" the lot of the chemist caught in foreign countries now at war is a hard one and subject to dangers from the hysterical condition of the people. An English journal states that a German chemist at Petrograd, named Keller, who was employed by the Russian-American India Rubber Co., has been arrested. It is reported that a few months ago wholesale cases of mysterious poisoning occurred in various works in Petrograd and elsewhere in a number of rubber plants. A search of Keller's lodgings is said to have disclosed compromising papers and chemical compounds producing effects similar to those experienced by the workmen who were poisoned.

The probabilities are that the subtle police have got hold of his compounding formulas for rubber and, as these seem mysterious, they are likely to be regarded as some strange poison intended to exterminate the entire Russian nation; and probably the unhappy chemist will prove another victim to the excited state of the public mind in these times of war.

THE USE OF SODIUM BI-SULPHIDE IN COAGULATION OF LATEX.

Dr. H. P. Stevens stated at the International Congress of Tropical Agriculture, that sodium bi-sulphide was used to make pale crêpe plantation rubber, as this was preferred by many users. Only what might be called a trace of this compound was added to the latex before coagulation and this was quite a different thing than adding large quantities to crude rubber which had been proposed elsewhere. To prove whether this addition was deleterious or not a sample of plantation was prepared with the addition of a small quantity of the sodium bi-sulphide to the latex and another was prepared without the same addition.

Both these samples were sent to a cable manufacturing company for trial and the test showed that the sample containing the bi-sulphide was if anything better than that prepared without it. To confirm this another set of samples was compared and a like result was obtained. Therefore it was concluded that the addition of sodium bi-sulphide was beneficial rather than otherwise in the coagulation of latex.

ISOLATION OF THE INSOLUBLE CONSTITUENTS OF CAOUTCHOUC.

Bernstein in the "Kolloid Zeitung," Vol. 15, page 49, comments on the work of Spence and Kratz which we reported in the October issue of this publication.

He states that the method they used is not novel in so far as it depends on the reduction of the viscosity of a rubber solution to enable one to separate the insolubles from the rubber. Diminution of viscosity may be produced by other means than that used by Messrs. Spence and Kratz. For example this may be accomplished by the use of acids, and sulphuric acid has been used for the estimation of caoutchouc in crude rubbers. Compare Marquis and Heim, A. 1913, page 884.

ASBESTOS PACKINGS.

Experience has lately shown that inquiries for asbestos stuffing-box packings have been at such low prices as to preclude the delivery of reliable articles, even where the percentage of cotton was a minimum one. Investigation disclosed the fact that the asbestos filling was in many cases heavily loaded with weighting substances, in order to reduce the cost. Asbestos is not of itself an expensive product, but, according to German experts, there are fillers 70 per cent. cheaper than asbestos and even still cheaper.

The question, however, has arisen of the effect of this packing on the piston rod, in producing heating, with the result that the machine is put out of operation until repaired. Such bad packings may cause a permanent injury to the reputation of factories, thus opening the way to competing products.

With a view to eliminating this difficulty, it has been suggested in Germany that manufacturers and dealers should combine in producing a quality of packing with a guaranteed percentage of cotton yarn and a good quality of asbestos. Such a quality corresponds with that delivered to railways by large factories. Hence it has been suggested to call this article the "Railway" quality, by which a distinctive grade would be indicated, the delivery of an adulterated quality being made a punishable offense.

Asbestos packings are sometimes delivered "Double Spun," but this is only found necessary with railway packings over 17 m.m. (0.67-inch) in diameter. For packings of smaller diameter, "Single Spun" is found sufficient for both railways and other consumers.

THE CONSUMPTION OF ANTIMONY.

In 1913 the United States consumed 12,755 tons of metallic antimony with a value of $1,828,967. Of this amount there was 1,000 tons of oxides and salts valued at $117,000.

ENGLAND SHIPPING CHEMICALS.

The restrictions which the British government placed on the export of chemicals at the outbreak of the war have been removed to some extent, and firms in the Manchester district are now in a position to fill reasonable orders for such supplies. The list of obtainable chemicals includes the following of interest to rubber manufacturers: Acetone; antimony salts, 45 and 75 per cent.; barytes, sulphate of all qualities, free from lime and suitable for all purposes; carbonate of magnesia; lithopones; tetrachloride of carbon; zinc, sulphate of; zinc oxide; chloride of barium; glycerine; rosin, and wax.

OZOKERITE IN UTAH.

According to a report of the United States Geological Survey, which has been making an investigation of the possibilities of this country in the way of producing articles hitherto obtained from Europe, ozokerite, or natural mineral wax, occurs in considerable quantity in Utah. The market for this product being largely in the Eastern States, the cost of production and transportation to such points has made it impossible to compete with the imported product, which came from Galicia. It is possible now, however, that interest may be taken in the development of the industry in this country.

RUBBER NOW ON THE CONTRABAND LIST.

A British decree proclaimed on September 21 places several additional items, including rubber, on the list of objects and materials held as conditional contraband by that country. Under dates of September 8 and 25 additions were also made to the list of articles of which export has been prohibited. Aeroplanes, airships and balloons of all kinds and their component parts are prohibited export to any destination whatever; while india rubber sheet, vulcanized, and rubber, raw, are prohibited exportation to certain countries, namely, to all foreign ports in Europe and on the Mediterranean and Black Seas, with the exception of those of France, Belgium, Russia (except the Baltic ports), Spain and Portugal. Late in October crude rubber became unconditionally contraband, shipment from any English port being prohibited.

On October 3 the French Government declared crude rubber and automobile tires contraband, the order covering "leather, pneumatic and other automobile tires and the raw products from which they are manufactured." This order has evidently been somewhat modified, however, and permission granted for the export of certain rubber products as, for instance, all tires made by the Gaulois company at Clermont-Ferrand, France, except solid tires, which are being turned out for the government at the rate of 400 a day. Export of Gaulois tires to the New York branch of this company is said to have been resumed.

The Russian Government has also prohibited the export of rubber and rubber tires, but this government is prepared to authorize, without any formality, the exportation of such prohibited goods as may not be required in Russia, in British or Allied vessels, if the port of destination is a British or Allied port. If the destination be a neutral port, permission will be granted only if the Embassy or Legation of the neutral country in which the port in question is situated certifies in agreement with the Embassy or Legation of the Allied country under whose flag the vessel sails that such prohibited goods will be unloaded in a neutral country and will not be re-exported to the country of an enemy.

The list of articles which Germany and Austria propose to treat as conditional contraband was made public on September 18 and includes, in addition to crude rubber, waste and substitutes, balloons and flying machines and their distinctive component parts and accessories intended for use in connection therewith.

The Testing of Balloon Fabrics.

By R. A. D. Preston.

TESTING balloon fabrics may be considered as comprising first the routine testing of the fabric and its component parts during manufacture, and secondly testing of a research nature to determine the behavior of the fabric under special conditions. The principal routine tests made at the Goodyear Tire & Rubber Co. are tensile tests and resin determination of rubber to be used in the proofing compound, tensile and stretch test and determination of sizing in the unproofed cloth and tensile and permeability tests of the finished fabric. The specifications of a balloon fabric usually consist of maximum weight and maximum permeability to gas per unit of area and minimum tensile strength per unit width in the direction of warp and weft of the principal ply of fabric (in case of "bias" fabric).

Considering these in the order named, a sample of the rubber is washed with special care, dried, compounded to a standard formula and a specially shaped sample mold-cured and tested for tensile strength, stretch and set on the H. W. Cooey machine (Fig. 1) which registers a graph of these properties. The resin content is determined by extracting with acetone, using the well-known underwriters' apparatus.

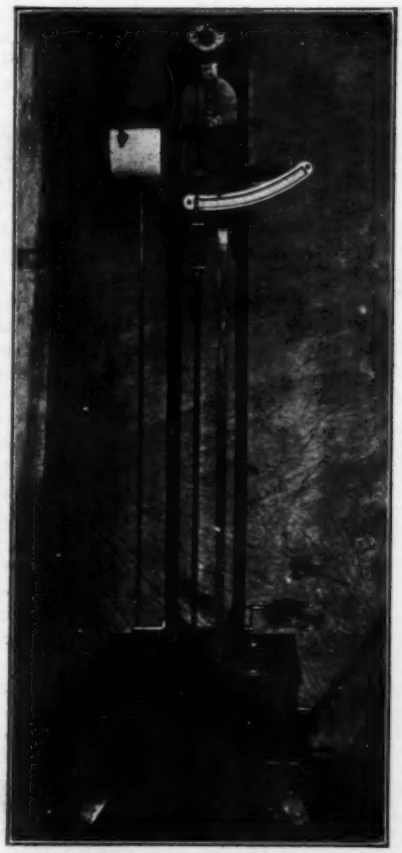


FIG. 1. COOEY RUBBER TESTING MACHINE.

Tensile and stretch tests of the unproofed cloth are made on the Olsen fabric testing machine (Fig. 2). The standard sample dimensions for warp and weft strength have been the subject for considerable study. Test pieces 2 inches wide and 7 inches long are cut carefully with their length parallel to the warp and weft respectively. Three tests are made in each direction and one-half the average value of the breaking load taken as the tensile strength per inch. That this width sample gives the most representative value of tensile strength is confirmed by tests on specimens of varying width and length made at the English National Physical Laboratory. In making tensile tests of fabrics it is desirable to keep the samples for several days in a room of constant relative humidity (usually 65 per cent.). The amount of moisture in the fabric considerably influences its tensile strength, the difference between dryness and saturation often reaching 40 per cent. of the normal strength.

The bare cloth is also tested for traces of starch sizing by boiling out a small sample in distilled water and testing the solution with iodine. Any appreciable quantity of sizing prevents the proper impregnation of the fabric on the spreading machines.

The strength and stretch of finished fabric is determined in the same manner as in the case of the bare cloth. Considerable attention has been given to tests of fabric seams and standard specifications have been adopted which make the joint stronger than the fabric itself.

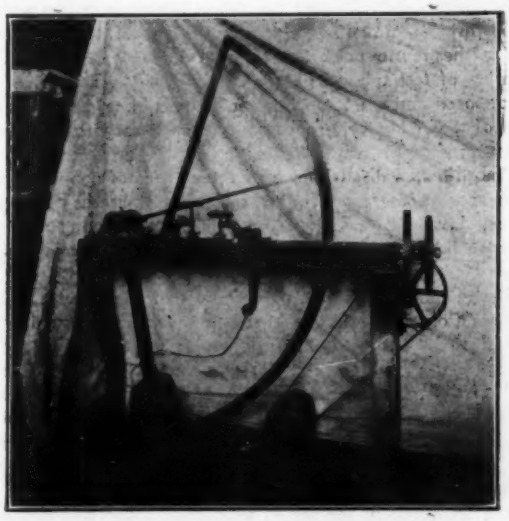


FIG. 2. OLSEN FABRIC TESTING MACHINE.

The most interesting and practically the only test in the series for which special apparatus other than that customarily used in the rubber and textile industries is required, is that for permeability to gas. Although illuminating gas is nearly always used for spherical balloons, the permeability of balloon fabric is expressed in volume of hydrogen (the gas exclusively employed for the inflation of dirigible balloons) which under specified pressure (usually the equivalent of 2 inches water) will leak through a unit area of the fabric in 24 hours.

There are several methods of determining hydrogen diffusion. That of most historical interest is the Renard-Surcouf balance. The apparatus consists essentially of an ordinary balance to one arm of which is attached a bell jar dipping into a water tank. Across the top of the jar the test piece is held by two metal rings with a rubber gasket, the whole being well bolted together. The bell jar is fitted with connections so that pure hydrogen may be passed through it. This is done until the air is eliminated. The bell jar is then weighted to give the desired pressure, when the stop cocks are closed and connections detached, balanced with weights on the other arm of the balance and allowed to remain 24 hours. Due to diffusion of hydrogen through the test fabric, the equilibrium will be destroyed and the bell jar will drop slightly. This will be indicated by the balance pointer, and with proper corrections expresses the leakage per 24 hours.

Another apparatus somewhat used in France is that of Josse. From the sketch (Fig. 3) it will be seen the essentials are a

metallic box (2) surrounded with a water jacket to maintain constant temperature of the gas, provided with a flanged top (1), and ring and gasket arranged to hold the test piece. The bottom of this box is fitted with a glass graduated tube (7) which extends to the bottom of a concentric glass cylinder (8). There are two connections in this graduated tube, one to pass hydrogen into the box and the other a "U" tube (4) to register the gas pressure. Connected by a tube with pinchcock to the bottom of the concentric cylinder is a bottle (6) holding a volume of water equal to that of the graduated tube. The procedure is as follows: The fabric is first tested for impermeability to air by closing the valve (5) maintaining a constant pressure in the "U" tube by raising the bottle to the necessary height and noting if the level of the water in the graduated tube remains constant. If the fabric holds air it is then tested for hydrogen diffusion. Hydrogen is passed through the box under the fabric until the air is completely swept out (test burning of test tube of gas from "U" tube). The valve (5) is then closed and the loss of gas in a given time measured by the rise of water in the graduated tube necessary to maintain the stated pressure in the "U" tube.

The principal disadvantage of these types of apparatus is that their accuracy is dependent largely on the tightness of the drums or bell jars and connections, of which, due to necessary laboratory refinements, there are many; and that account must be taken of the diffusion of air into the drum.

The method used in the laboratories of the Goodyear Tire & Rubber Co. is to maintain a constant pressure of hydrogen on one side of a test piece of fabric while air is passed by the other side, taking with it the hydrogen which has diffused through the fabric, which hydrogen is burned to water in a combustion furnace and weighed, giving with a simple calculation the leakage of the fabric over a definite time interval. With this apparatus the only joint under appreciable pressure which must be kept tight is that between the fabric and the bottom half of the drum.

The technique of the test is as follows: The two hemispheres of the bronze diffusion drum (6) (Fig. 4) are opened and the balloon fabric diaphragm (7) to be tested is inserted, the two halves of the drum being then bolted together so securely that the joint is gas tight. The drum is then placed in a thermostatic bath (not shown in diagram) and brought to the required temperature, usually 20 deg. C.

When the drum and its contents have attained the desired temperature, hydrogen is allowed to pass from the cylinder (1) through the gas washing bottle (2) filled with strong sulphuric acid for drying the hydrogen, thence through the preheating furnace (3) whose purpose is to burn all organic gaseous impurities in the hydrogen and to combine any contained oxygen with it to water; the purified gas then passes through the gas washing bottle (4) filled with caustic potash solution to remove traces of carbon dioxide, etc., and then through the bottle (5) filled with strong sulphuric acid to remove the last traces of water; thence into the under side of the diffusion drum (6).

The purified hydrogen gas is passed into the lower half of the drum (6) and out through the tube (15) until all the residual air contained in this lower half has been displaced by hydrogen and swept out. The tube (15) is then closed and the pure hydrogen allowed to diffuse upward through the diaphragm for a definite time.

The hydrogen diffusing through (7) into the upper half of the drum (6) is swept out by a current of air admitted through the tube (14). The hydrogen containing air passes through the gas washing bottles (9 and 10) whose purpose it is to remove any adventitious moisture, they being filled with strong sulphuric acid; thence the gases pass into a heated combustion tube (11) filled with platinized asbestos, where the hydrogen is burned to water, which in turn is absorbed and weighed in the Geissler bulbs (12 and 13).

No. 8 is a pressure regulating device whose function is to maintain a constant gas pressure in the lower half of the diffusion drums, the pressure usually equaling a 2-inch column of water.

Knowing the exposed area of the diaphragm, the time of diffusion, and the weight of the water obtained by the combustion of the diffused hydrogen, a simple calculation enables us to determine the diffusion per square yard in 24 hours, and results are always reported as cubic feet of hydrogen diffused per square yard in twenty-four hours at the given constant temperature and pressure.

The apparatus of Professor Heyn in use at the Imperial Testing Laboratory Gross Lichterfelde (near Berlin) is essentially similar to the Goodyear equipment, except that the test piece is much smaller (about 4 inches against 9 inches diameter) and no provision (unless this has been done recently) made for maintaining uniform temperature of the gas and fabric. It has been shown with the Goodyear and other apparatus that temperature has a marked effect on the diffusion rate.

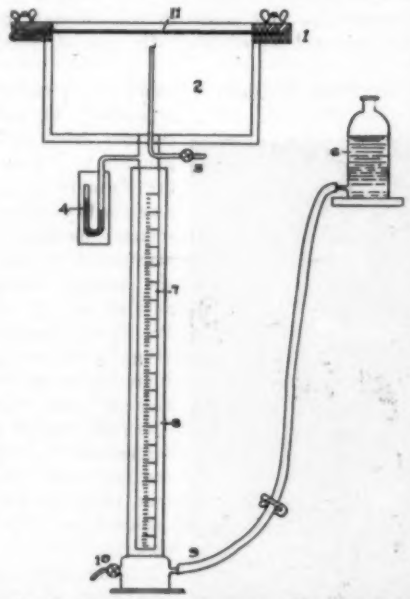


FIG. 3. JOSSE'S APPARATUS FOR TESTING THE PERMEABILITY OF FABRIC TO GAS.

The apparatus thus far described measures the amount of hydrogen which has diffused through the fabric during a given period. An instrument on an entirely different principle has been developed recently in Germany with which it is possible to read directly the rate of diffusion. This is the gas interferometer made by the firm of Carl Zeiss, Jena.

The principle of the apparatus is briefly as follows: The upper part of a pencil of light rays made parallel by a collimator passes through the upper halves of two narrow vertical slits in the objective of a telescope. Half the lower part of this pencil passes through one of two gas chambers between the collimator and the telescope and the other half through the other. These two sets of rays from the gas chambers pass through the lower part of the above mentioned slits in the objective. If one of the gas chambers is filled with pure air and the other with a mixture of air and hydrogen, on looking through the eye piece of the telescope the lower interference spectrum will be displaced with respect to the upper (whose rays do not pass through the gas chambers). By turning, by a micrometer screw, a series of prisms placed in the path of one of the lower sets of rays, the principal dark lines in the two spectra can be brought together. The number of divisions through which the screw is turned is a measure of hydrogen content of the hydrogen and air mixture. In practice air from above a test piece of fabric (and therefore containing hydrogen diffused through the fabric) is drawn at a known constant rate through the gas chamber of the interferometer while the other chamber is filled with purified air. The test piece is held in a drum essentially similar to that in the Goodyear apparatus. The instrument is calibrated by

observing the readings using known mixtures of CO_2 and air and correcting for the difference in indices of refraction of CO_2 and hydrogen or using directly mixtures of hydrogen and air, the former method being easier to apply in the laboratory.

Tests to determine the variation of diffusion with temperature and pressure show the diffusion rate to vary directly with the temperature within practical limits and to increase with increase in pressure but not proportionally, increments in permeability decreasing with increase in pressure. For a given temperature and pressure the permeability increases until the fabric becomes saturated with hydrogen, then remains practically constant.

The units used in expressing results of the tests described are:

Test.	English.	Metric.
Tensile strength.....	Pounds per inch.	Kgm. per meter.
Weight	Ounces per sq. yd.	Grs. per sq. meter
Hydrogen diffusion...	Cubic feet per sq. yd. per 24 hours at 2 inches water pressure and 15 deg. (or sometimes 20 deg.) C. at 29.92 inches barometer.	Liters per sq. meter per 24 hours at 50 mm. water pressure at 15 deg. C. and 760 mm. barometer.

In the last quantity the water pressure and temperature vary somewhat with different testing plants. A good spherical balloon fabric obtainable in this country has a weight of 7¾ ounces per square yard, strength (one ply on bias) of 40 pounds per inch, and a diffusion of 0.4 cubic feet. Two characteristic dirigible balloon fabrics have weights of 9 and 14½ ounces per square yard respectively, strengths of 90 and 130 pounds per inch, and diffusion rate of from 0.2 to 0.25 cubic feet. The first is two-ply and the other three-ply parallel doubled fabric.

In addition to the routine work many research tests have been made, utilizing for the most part apparatus already described, to determine, for example, the properties of balloon fabrics under such special conditions as compound stress, varying weather exposure, extremes of temperature; the relation of rate of diffusion to temperature and pressure of the gas, the increment of weight due to rain, etc.

An interesting series of tests has been made on the elasticity and ultimate strength of balloon fabrics under compound stress at the National Physical Laboratory in England. The test specimen was a cylindrical surface of the fabric 5 inches diameter by 12½ inches long fitting over metal end pieces so formed that the surface and ends as a whole can be placed in a testing machine for the application of a longitudinal tension, while one of the ends connects with an air supply for internal pressure

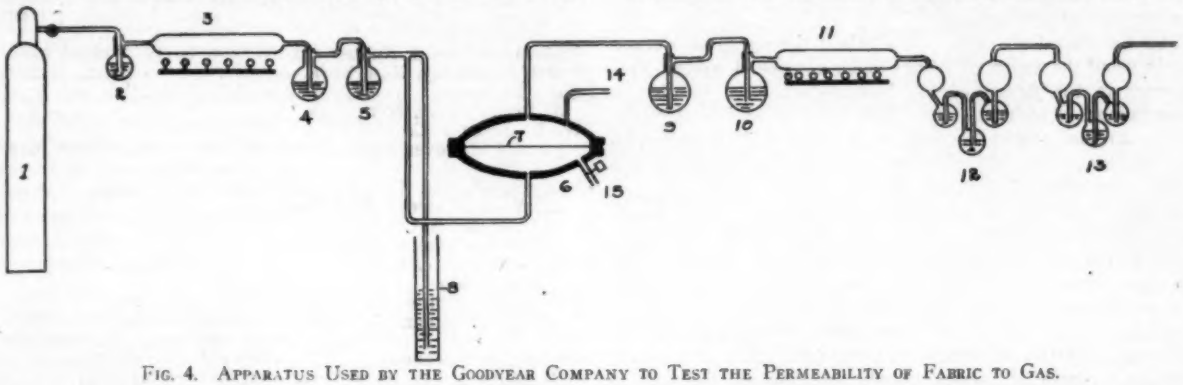
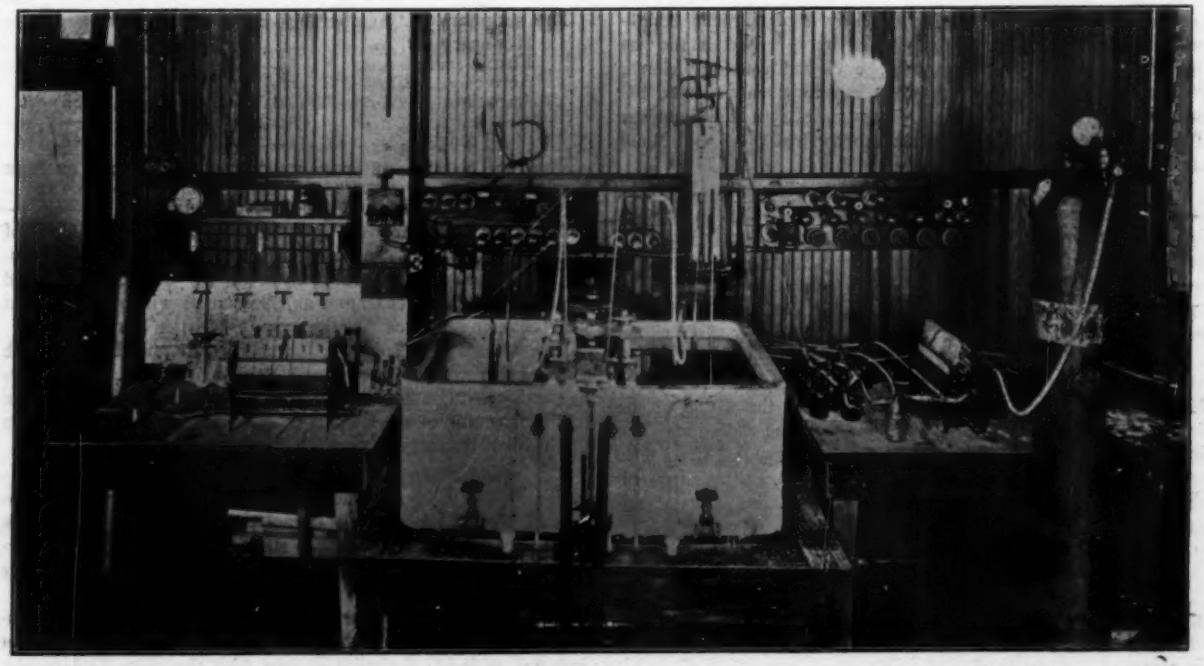


FIG. 4. APPARATUS USED BY THE GOODYEAR COMPANY TO TEST THE PERMEABILITY OF FABRIC TO GAS.



HYDROGEN DIFFUSION APPARATUS USED IN THE CHEMICAL LABORATORY OF THE GOODYEAR COMPANY.

and the other carries a ball thrust washer, so that no torsional stress of the bag as a whole can occur. The conclusions of the series of tests may be briefly stated.

1. For any single or double parallel woven fabric under compound stress the stresses in the fabric parallel to the warp and weft are independent.

2. A method is developed of computing the ultimate strength of a double diagonal cotton fabric under compound stress from simple tensile tests.

3. For a fabric under compound stress each of the two strains is a function of both stresses.

The Germans have with characteristic thoroughness worked out in detail the action of fabrics under compound stress. Preliminary to the design of the Siemens-Schuckert dirigible, a large number of such tests were made using apparatus essentially similar to that above described. These are well described in Hass & Dietzius Stoffdehnung und Formänderung der Hülle von Prall Luftschiffen (J. Springer, Berlin).

Besides tensile and diffusion tests (the latter with Prof. Heyn's apparatus), bursting tests of considerable interest have been made at the Imperial Testing Laboratory (near Berlin). The apparatus is so arranged that any desired air pressure can be impressed against the under side of a circular test piece and a graph of rise of the center of the fabric surface and pressure obtained. A series of tests to determine the effect on apparent bursting strength of varying sample diameter and the relation between strength determined from the bursting test and tensile tests showed about 10 per cent. decrease in strength in sample diameter increase from 11.3 to 50.5 cm. and tensile test strength about 66 per cent. that of the bursting test. It must be noted that the fabric used was two-ply diagonally doubled fabric. On parallel fabric the tensile test strength would probably be higher than the bursting strength.

Another series of tests made at the National Physical Laboratory furnished valuable data on the effect of weathering on the permeability and tensile strength of several varieties of balloon fabric. Samples for both these properties were tested after 24, 48, 72, 96, 120 and 144 days' exposure. The most important conclusions are: (1) Fabrics deteriorate more when exposed to moisture and light than to light alone; (2) the coloring yellow of the outer cotton layer is clearly beneficial; (3) just before the fabric finally disintegrates its permeability is temporarily greatly improved (this indicates that a marked improvement in the gas tightness of an old balloon should be viewed with suspicion); (4) in most cases the decrease in tensile strength after 100 days' exposure is 30 per cent. or over. Tests in the Goodyear Tire & Rubber Co. laboratory tend to confirm the first, second and fourth of these conclusions.

Tests from the same source (N. P. L.) of fabrics after subjection to temperatures of —15 deg. C. and —25 deg. C. showed practically no effect of the former and a considerable increase in leakage due to the latter temperature. Tests for increase of weight due to water adherence showed about 10 per cent. for fabrics rubber-coated on the outside and 20 per cent. for fabrics having cloth on the outer surface.

A series of tests to determine the transmission of heat through various types of balloon fabric was made in the Goodyear laboratories. It was found that the color of the inside of the fabric had comparatively small influence on the radiation. The influence of "silvering" the outside was also small. The fabric with yellow exterior and dark brown interior coating seems on the whole most satisfactory. In this manner is made the standard Goodyear balloon fabric.

MONOGRAMMED TIRES.

Automobile tires are now being made with the owner's monogram or initials molded into the casings, one company advertising that its New York branch will accept orders for tires made in this way.

MANY NEW MEMBERS FOR THE RUBBER CLUB.

AT the meeting of the Executive Committee of the Rubber Club of America, held at the Union League Club, New York, October 13, the following members were elected:

FIRM MEMBERS.	FIRM REPRESENTATIVE.
American Hard Rubber Co., 11 Mercer street, New York.	James F. Giles.
H. A. Astlett & Co., 117 Pearl street, New York.	E. R. Hawkins.
A. W. Brunn, Produce Exchange Annex, New York.	A. W. Brunn. (Changed from active membership.)
Endurance Tire & Rubber Co., 1789 Broadway, New York.	Wilson G. H. Randolph.
Earle Brothers, 66 Broad street, New York.	R. W. Earle.
W. R. Grace & Co., 1 and 2 Hanover Square, New York.	W. E. Byles. (Changed from active membership.)
Kelly-Springfield Tire Co., 227 West 57 street, New York.	Van H. Cartmell.
L. Littlejohn & Co., 129 Front street, New York.	Wm. E. Bruyn.
Goodyear Tire & Rubber Co., Akron, Ohio.	P. W. Litchfield.
Johnstone, Whitworth & Co., 140 Pearl street, New York.	J. T. Johnstone. (Changed from active membership.)
Obalski & Sweeney, 24 Stone street, New York.	Edward C. Sweeney, Jr. (Changed from active membership.)
Reading Rubber Mfg. Co., Reading, Massachusetts.	William H. Marland. (Changed from active membership.)
Republic Rubber Co., Youngstown, Ohio.	Thomas L. Robinson. (Changed from active membership.)
William H. Stiles, 97 Water street, New York.	William H. Stiles.

ACTIVE MEMBERS.

Lloyd E. Appleton, F. H. Appleton & Co., 5 East 42nd street, New York.

Edward H. Huxley, United States Rubber Co., 1790 Broadway, New York.

ASSOCIATE MEMBER.

John W. Coulston, J. W. Coulston & Co., 80 Maiden Lane, New York.

The resignation of one associate member was accepted.

The summary of membership is now as follows:

Honorary	3
Firm	83
Active	204
Associate	58
Total	348

RESOLUTION PASSED BY THE EXECUTIVE COMMITTEE OF THE RUBBER CLUB OF AMERICA AT ITS MEETING HELD AT THE UNION LEAGUE CLUB, OCTOBER 13, 1914.

Whereas, the Executive Committee of the Rubber Club of America recognizes the importance of the Census of Manufactures which the Federal Bureau of the Census is required to take every five years, and as this census will be taken next year covering figures for the year 1914, it is hereby

Voted that the Executive Committee of the Rubber Club of America would recommend to all rubber manufacturers in the United States that they give their hearty co-operation to the Director of the Census in order that the statistics from the rubber industry may be accurate and complete.

PROTEST AGAINST MAKING RUBBER CONTRABAND.

The Rubber Club of America and the Rubber Trade Association of New York, recently organized by the rubber importers, are both considering entering a protest with the State Department at Washington against England's action in placing crude rubber on the list of absolute contraband.

THE INDIA RUBBER WORLD has also been appealed to by a number of individuals and corporations connected with the rubber industry to lodge a similar protest with the State Department.

The Editor's Book Table.

RUTHERFORD'S PLANTER'S NOTE BOOK. SIXTH EDITION, 1914. The Times of Ceylon Co., Ltd. Colombo and London. [8vo, Pp. 478.]

THIS work, first issued (in 1887) for the benefit of Ceylon tea planters, has been expanded to cover all branches of tropical agriculture. The fifth edition having been sold in a week, a sixth is now on the market. It is still distinctly a work for Ceylon planters, though tea is now only one of the many crops comprehensively treated. While the information relates particularly to matters peculiar to Ceylon, there is much of interest to planters in all tropic lands and the whole work is full of curious enlightenment for the general reader. It is intended as a *vade mecum* for the Ceylon planter, treating of all the operations of the plantation from jungle clearing to bookkeeping and from digging out cocoanut beetles to capturing wild elephants. An endless variety of mathematical tables is presented to save time and give accuracy to the planter's estimates.

Of course, the most radical difference between planting in Ceylon and those operations in which most of the readers of this publication are interested is that dealing with the labor problem. It is assumed that every laborer is a "cooly," the number of coolies required is so and so, and the amount of work which can be done is so much "per cooly." The legal regulations dealing with the relation of planters and laborers are given in full and constitute interesting reading. The contract, if verbal, is assumed to be for a month only. Longer agreements must be in writing and acknowledged before a magistrate. The laborer may be employed during the hours usual to his occupation and when sent on a journey may not be required to walk more than twenty-five miles a day or carry a load of more than forty pounds. Most people will agree that further exaction on the part of the employer would seem a trifle oppressive.

In case of the sale of the estate to another person the contract is binding on the new owner, but the laborer may quit, on giving due notice. Refusal to work, on the part of the laborer, or to pay wages promptly, on the part of the employer, are alike punishable by imprisonment, as is also the enticing of servants from one employer by another. During temporary illness laborers receive food and medical care at the expense of the employer, who, however, is not bound to pay wages during such illness. Laborers' wages are a first charge upon estates. These wages seem generally to be 144 rupees, or about $46 a year.

In addition to tea and rubber, there are complete chapters or comprehensive articles on cocoanuts, cocoa, cardamons, tobacco, sugar, jute, manila, hemp, sisal, ramie, san, hemp, bowstring hemp and silk cotton. The rubber section runs through 59 pages and includes estimates of opening and maintaining plantations; tables of cost and probable production during a series of years; distances and numbers of trees in plantations and plants in nurseries. The information about rubber seeds as a by-product is full of interest. The kernels amount to about 50 per cent. of total weight and these kernels yield 42 per cent. of oil similar to linseed oil, the residue furnishing a meal valuable as cattle feed. The seeds are collected by children at a price of a little over one cent a thousand, American money, and pay a moderate profit when shipped to Europe.

Methods of tapping, of coagulation, of packing and many other matters are discussed by experts in the light of the most recent experience. The regulations to prevent rubber theft read curiously like the extra-legal edicts of the Ku Klux Klan soon after the war, to stop the brisk midnight merchandizing of cotton, which had become a business custom in many localities of the South. The penalties, however, are not the same.

HENDRICKS' COMMERCIAL REGISTER OF THE UNITED STATES for Buyers and Sellers. New York, 1914. S. E. Hendricks Co. [Cloth, quarto, 1,596 pages. Price 10 dollars.]

ABSOLUTE accuracy in classification is the chief merit of any directory; but to accomplish this object requires an immense amount of research and verification. This is particularly the case in a work intended to be used for constant reference, in which every name has to be checked over to insure correctness.

All these points have been kept in view in the compilation of the twenty-third annual edition of the above work, which has just been issued, and is well up to the mark of its predecessors. In fact, it includes many new features; it gives the names and addresses of the manufacturers of machinery and appliances required in the treatment of crude materials, including rubber, in appropriate classifications and sub-classifications. The descriptions of the various products are sufficiently detailed to give the prospective buyer just the information he is looking for. The principal houses in the rubber industry are also listed.

Numbering about 350,000 names in upwards of 45,000 business classifications, it will be readily understood why the index alone takes up 138 pages. The work, in its current issue, has fully maintained its reputation for accuracy and completeness.

THE FIRST OF THE 1915 CALENDARS.

The R. J. Caldwell Co., of 15 Park Row, New York, has stolen a march on all its rivals and been the first to issue a calendar for the year 1915. This company, which deals in tire fabrics—Sea Island, Egyptian and Peeler—handles the products of the Connecticut Mills Co., Inc., of Danielson, Connecticut, and the Canadian Connecticut Cotton Mills Co., Ltd., of Sherbrooke, Quebec, which have a combined capacity of 8,000,000 pounds; therefore it is quite appropriate that the 33 x 16 inch panel to which the calendar section is attached should contain reproductions of photographs of these two mills, while Old Father Time is pictured as "Still Going Strong," employing tires constructed of the fabrics of these mills to lend speed to his progress.

A NEW MILLER BOOKLET.

An interesting catalogue of information on accessories and illustrated description of repair materials has been published by the Miller Rubber Company, of Akron, under the title, "Modern Accessories for Permanent Tire Repairs." This attractive booklet covers all articles used in connection with the care and repair of tires. Illustrations and descriptive matter are clear and concise, and the booklet should afford valuable assistance in the selection and application of the right materials for any phase of tire repairing.

THE AMERICAN RUBBER CO.'S HANDSOME BOOK.

The American Rubber Co., of Boston, whose big factory in Cambridgeport, just across the Charles river from Boston, is a very conspicuous feature of the local landscape, has just issued a particularly well printed and handsome book of interior views showing the administrative offices and the various departments of the factory devoted to the manufacture of rubber garments. There are over twenty of these interior views (not to mention a few exteriors). They show the crude rubber, the sheets in the drying room, the rubber going through the calenders, the spreading and cutting rooms, the big workshops where the stitching is done, and finally, the garments hanging on racks in the vulcanizing rooms. This factory, by the way, has a capacity of over 3,000 garments a day.

SOME INTERESTING LETTERS FROM OUR READERS.

TO the Editor of THE INDIA RUBBER WORLD—Dear Sir: I would appreciate an opportunity of replying to your criticism appearing in the last issue of THE INDIA RUBBER WORLD, under the title "Mr. Cowen and the Marks process." This criticism is directed at remarks I made recently in England, in referring to the Alkali Process for reclaiming waste rubber. No one actively engaged in the rubber industry, at the present time, appreciates any more than I do the value to the industry of your vast and extended experience and the many acquaintances you have enjoyed with its most prominent men. There is no doubt but that we may list Mr. Robert Cowen as one of the foremost of these and one who did a great deal for the development of the rubber industry. I quite agree with you that Mr. Cowen was not a chemist, but he was indeed an expert machinist and an inventor. However, might we not say the same of Edison or of Goodyear? The former's inventions cover a wide range of the sciences, including chemistry, yet he could hardly be considered a chemist. The same is true of Goodyear, whose early training in the hardware business may have been of some assistance to him from a mechanical point of view, but had he known that *aqua fortis* contained sulphur he would no doubt have been able to take quicker advantage of the phenomena he observed in his experiments and detect the real relation existing between his tests and those of the unscientific Heywood, who had been using powdered sulphur. It is not at all uncommon to find that inventors seldom derive direct benefit or have a knowledge of the state of the science existing at their time. Mr. Cowen made up for this lack, in part, by employing young college graduates to work out his many ideas. Arthur H. Marks was one of these.

The statements I made, however, were not based upon hearsay. You must be aware that several patent suits have been brought to uphold the validity of the Marks patent, and some of these, I believe, are still pending. Without any desire, at the present, to go into the merits of these various cases, I would call to your attention letters which have been introduced in evidence and I think you will agree they sustain my statements.

In a letter from Mr. Cowen as Technical Manager of the Boston Woven Hose & Rubber Co. to Mr. Raymond B. Price, under date of October 25, 1900, he says:

"Since *he* went away from us I understand that he has taken out a patent for devulcanizing rubber by the use of high pressure and caustic soda. You well know that during the time that he was with us he was carrying out experiments of this nature. Of course it is well known to everyone who was connected with our company at that time that *he* was merely a workman in the laboratory carrying on this work under *your* direction—which work was directed mainly from suggestions received from *myself* as your superior officer at that time."

The word "he" refers to Mr. Arthur Marks, and the italics are mine.

Later Mr. Raymond B. Price, in writing to Mr. Robert Cowen as Technical Manager of the Boston Woven Hose & Rubber Co., under date of September 16, 1901, says:

"Your own letter files will show that the idea of carrying on the process on a larger scale was followed right up to the time of the company's failure." (1898) (Marks patent granted 1899.)

The process referred to is the Alkali Process, and the "company" is the Boston Woven Hose & Rubber Co.

The following is an extract from a letter by Mr. Robert Cowen as Technical Manager of the Boston Woven Hose & Rubber Co. to Mr. Raymond B. Price, under date of December 14, 1899:

"Caustic soda is a solvent of sulphur, as has long been known, and is used extensively for a great many years. In fact, the National Rubber Co. used caustic soda for devulcanizing a great many years ago.

"Now I am anxious to develop this process and if there is anything that you can tell me that has been done in the past which belongs to the company, I shall be grateful to you for same, as it will save me from doing over what has already been done."

Another extract of interest in this discussion is the following, taken from a letter of Mr. Raymond B. Price to Mr. Robert Cowen, dated December 23, 1899. "Arthur" refers to Mr. Marks:

"As for the soda process, Arthur has no more right to a patent on that than has Ship Sweet, who first tried soda in the laboratory, or you, whose general ideas were carried out, or myself."

In view of the facts disclosed by the above letters is it conceivable that Mr. Cowen was, as you say, "wholly in favor of the acid process for reclaiming," or that were Mr. Cowen alive "he would, in his frank way, give Mr. Marks full credit for his process?" Yours respectfully,

L. J. PLUMB, Chief Chemist,
October 19, 1914. U. S. Rubber Reclaiming Co., Inc.

[The statement that Mr. Cowen did not claim the alkali process seems to be disproved by Mr. Plumb's very interesting communication. It is well to remember, however, that Mr. Cowen—and this is not meant to be derogatory—was an enthusiastic claimer and an honest one. He, for example, claimed to have started THE INDIA RUBBER WORLD. Possibly he did suggest a rubber trade publication to the writer. At all events the claim did no harm. He and others who generally stated that they, through suggestion, were its real founders, were never contradicted. The Editor.]

TO the Editor of THE INDIA RUBBER WORLD—DEAR SIR: The very interesting paper on "The Influence of Nitrogen Compounds on Rubber" which appeared in the September issue, has, I find, attracted considerable attention. The interest which has recently been shown in this subject prompts me to direct attention to several materials well known to chemists, but seldom if ever used by the smaller rubber-goods manufacturer who does not employ the services of an advisory chemist. There are several nitrogen compounds which come into consideration for rubber mixings because of their market price (about 10c. per pound in July, 1914). Among these may be mentioned casein, glue from tanneries and packing houses, fish glue and blood albumen. Several of these were recommended by me for use either alone or in combination, as early as the year 1910. At that time, however, rubber-goods manufacturers were loth to listen to such a "theory," in spite of the fact that German manufacturers were then actually making use of it. A younger chemist with some experience in rubber, assured me that "all such fancy additions to the compound have a bad effect on the rubber goods."

Other nitrogenous materials which might prove of value are powdered wool, which contains both nitrogen and sulphur; and powdered silk, which contains nitrogen. These materials in powdered form are both articles of commerce. One of the difficulties which might interfere with the use of such substances is their fibrous character and their moisture content. When precipitated gelatin is used in rubber compounds it should be previously mixed with glycerin or other softener.

Tetramino carbazol is an interesting aromatic amine obtained from coal-tar, and possibly this will prove of value as an accelerating agent in rubber mixings.

FREDERIC DANNERTH.

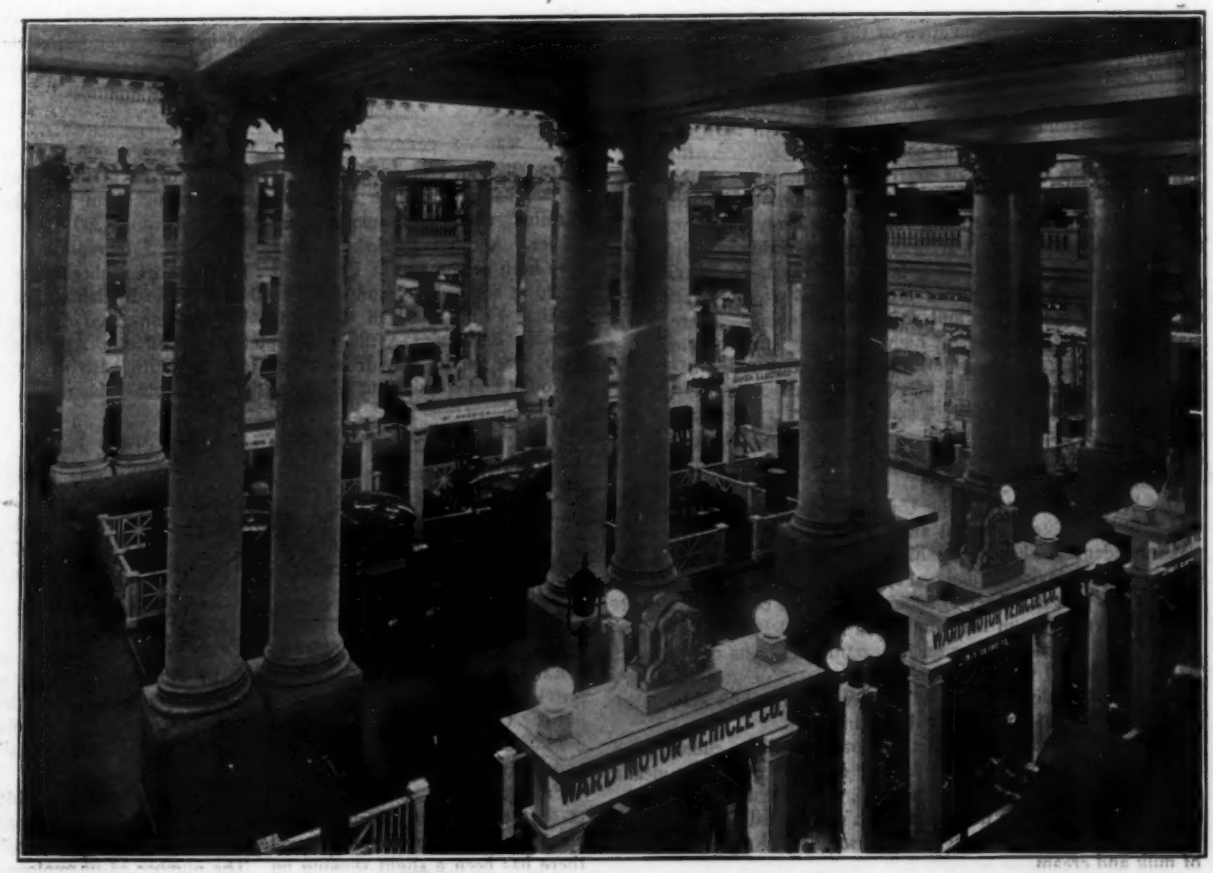
The Rubber Trade Laboratory, Newark, N. J.

Replete with information for rubber manufacturers.—Mr. Pearson's "Crude Rubber and Compounding Ingredients."

The Electrical Exposition and Motor Show of 1914.

THE Electrical Exposition and Motor Show of 1914 was held in the Grand Central Palace, New York, from October 7 to 17. In the extent and variety of exhibits and in the popular interest manifested it was the most successful show of this sort yet held. The attendance during the ten days ran close to the 200,000 mark.

While on the surface rubber was not greatly in evidence, it was, nevertheless, a very important feature of the exhibition. In fact, practically every exhibit there depended upon wires and cable insulated by rubber or gutta percha for its effective operation. Rubber-covered conductors made it possible to contribute the brilliant illumination which was an effective feature of the evening exhibit and to impart power to the great variety of machinery displayed. So, while rubber might not be called a conspicuous feature of the exhibition, there was much of it there if one but looked for it.



GRAND CENTRAL PALACE DURING THE ELECTRICAL EXPOSITION.

For instance, there was an interesting apparatus exhibited by the Electrical Testing Laboratories for testing rubber gloves used by electrical workers. It subjects the gloves to a test of from 3,000 to 10,000 volts from one to five minutes. Unless they successfully withstand this test they are rejected as unfit for use.

There were various electric storage batteries which are used for operating autos., trucks and submarines. One type is used for the starting, lighting and ignition system of gasolene cars. Hard rubber enters into the construction of these batteries to a considerable extent. The battery jars, covers, vent-cap and the separators are all made of hard rubber, while soft rubber gaskets are used under the covers. One type of storage battery attempts to eliminate the use of hard rubber, but it is not wholly successful, as hard rubber insulation is of necessity used on the bottom and sides of the jar and hard rubber strips are placed between the plates.

Pneumatic cleaners with rubber gaskets, rubber-lined and armored hose and rubber-proofed dust bags were shown in great variety. The electrical washing machine that is guaranteed to save time and labor depends on the electrically operated wringer with its rubber-covered rollers to make it complete.

If you own a piano player and wish to avoid the exertion of pedaling there is a blower operated by electricity which will do the work. But it is necessary to connect the piano and the blower with a 1¼-inch rubber covered hose. A great deal of rubber tubing is used, by the way, in the modern player piano.

The General Electric Co. exhibited a great variety of household devices, automobile accessories, lighting fixtures, lamps and testing apparatus. The new rectifier for charging ignition batteries proved of interest to the owners of automobiles. With this device

ignition batteries can be charged from an ordinary alternating current lighting circuit. Another device of interest to automobilists was the tungsten contact for igniting. There was also shown a complete line of the Mazda lamps and fixtures for motion picture theatres, department stores, factories and street lighters. The motor exhibit consisted of motors from one two-hundredth of a horsepower to ten horsepower. House owners were interested in the bell ringing transformers, gong type transformers, toy transformers and the household ozonator.

The Westinghouse Electric & Manufacturing Co. had an elaborate display of electrical apparatus both for home and industrial use. The exhibit included a complete line of motors, heating apparatus, measuring instruments, protective devices and apparatus used in the generation and distribution of electric power. A striking feature was the new Luxsolite fixture showing the "Type C" Mazda lamp arranged for street lighting. The radiant toaster, an inexpensive device for making crisp toast, was one of the interesting culinary features of the exhibit. The Venturia and Sirocco types of ventilating outfits for homes and buildings were shown. A complete line of alternating and direct current motors for industrial, home and farm use, together with accessories used with each, attracted considerable attention. There was the pillar type flame arc lamp which is being extensively used in the illumination of the "White Ways" of cities and towns. This is an ornamental type of lamp which is very attractive.

In the division of Electro-Therapeutics there was a great variety of machines and apparatus in which both hard and soft rubber were in evidence. The comprehensive exhibit by the New York Edison Co. consisted of electrical appliances for the hospital, the general practitioner, for dental offices and the electrical insulation of a modern operating room. An X-ray outfit in which rubber plays an important part was a feature of this exhibit.

The Oxyoline apparatus used in the treatment of tuberculosis and which is attracting much attention among physicians, has considerable hard rubber and soft rubber tubing. There were machines for the treatment of high blood pressure, reducing machines, line irrigating equipments and various types of lamps for dermatological work—all of which use rubber in some form.

The Turner Detective Dictograph with hard rubber ear pieces, cover and keys and the "Acousticon," which is all hard rubber, are instruments of extreme interest, respectively, to the wrongdoer and the deaf.

The War Department of the United States Government exhibited field signalling apparatus and methods. Here insulated wire was in evidence. The Navy exhibit showing the navigating appliances, steering devices and signal system used on a modern battleship did not lack in rubber of some sort. In the control of a modern gun turret or gun fire control, in coast defence or artillery practice, the telephone plays an important part. The double head sets are provided with soft rubber ear pieces for protection. A modern rubber diving suit and a diver's lamp with its rubber gasket are part of every battleship equipment.

In the modern dairy the electric motor and india rubber have taken the place of the dairymaid. The cows are milked by means of an electrically driven vacuum pump, rubber teat cups and rubber tubing. There was in this exhibit a mechanical filling machine which with the aid of a soft rubber disc fills and caps the bottles of milk and cream.

In the model garage and charging station could be seen the various types of the Schaler Vul-Kit, Model B, Motorist Model and Garage Model Vulcanizers. These are electrically operated and guaranteed to satisfactorily repair any type of tire or inner tube.

EXHIBITION NOTES.

The Habirshaw Wire Co., Yonkers, New York, exhibited submarine cables used for mines and torpedoes, signal wires and cables used in electrical transmission as well as aerial automobile cable. The features of the exhibit were the "Black Core," "New Code" and "Red Core" wires.

The General Vehicle Co. exhibited delivery vehicles. The solid tires used were the Firestone Removable and the United States Demountable.

The Ward Motor Vehicle Co. exhibited a small electric delivery wagon designed to meet the requirements of local tradesmen. The tires were Firestone Side Wire Quick Demountable S. A. E. The truck exhibited by this company use the Dual Firestone Side Wire Q. D. tires on both front and rear wheels.

The Detroit Electric Vehicle Co. exhibited three cars with Motz and Goodrich Silvertown Cord Tires. The control handles of the cars, switch and push keys were of hard rubber.

The Rauch & Lang Co. exhibited two limousines with Motz tires, rubber running board tread and hard rubber mountings on the doors and control handles.

The New York Edison Co. made an interesting exhibit of the method used in splicing electrical cables. There was a demonstration of the application of electricity in the manufacture of so-called artificial ice and refrigeration for the production of iceless ice cream.

Among the many "Safety First" devices for industrial plants was the Push Button Control exhibited by the General Electric Co. This is a simple, practical device for starting, stopping and controlling the speed of motors simply by pushing a button.

RUBBER CARGOES SUNK BY THE BELLIGERENTS.

The German cruiser "Emden" is reported to have sunk 15 or 16 merchantmen in the Indian Ocean. Among them was the "Troilus" which had, among other items of cargo, 1,200 tons of rubber. Another English steamer, the "Titan," is reported to have been set on fire at Port Said. Its cargo of rubber is estimated at somewhere from 300 to 500 tons. The British steamer "Indian Prince," which was sunk by the converted German cruiser "Kronprinz Wilhelm" September 9 off the Argentine coast, was on its way from Bahia to New York with a cargo of coffee and a shipment of 17 tons of Maniçoba rubber.

THE WAR MAKES HIGH INSURANCE RATES.

Rubber importers are feeling the effects of the war in excessive insurance rates. Inquiries on rates from Pará to New York are met with figures of from 1½ to 2 per cent., but on taking out the papers for an actual shipment, the rate is usually from 3 to 4 per cent., showing the uncertainties of trade during war time.

TRADE CONDITIONS AS SEEN BY RUBBER CLUB MEMBERS.

Early in October the Rubber Club of America sent out a series of questions to prominent rubber manufacturers throughout the United States to get their ideas on the business outlook. Nearly all of the letters were answered promptly and in detail and the replies were singularly unanimous.

From a careful comparison of the answers, one could be able at once to see that the rubber trade was in a fairly satisfactory condition. In the matter of collections, wholesale and retail, there has been a slight slowing up. The number of unemployed seems to be about the same as last year. Supplies of raw products during the last month have been normal, although deliveries during the early days of hostilities were slow and prices were raised for a time. Of manufactured rubber goods imported, a great many lines have been cut off entirely, but none that could not be produced in the United States. Manufacturers are looking with interest to outside markets and making some effort to secure them, but are cautious because of lack of credit facilities. The behavior of banks towards borrowers seems to be about normal.

News of the American Rubber Trade.

ANNUAL MEETING OF THE McGRAW TIRE & RUBBER CO.

At the annual meeting of The McGraw Tire & Rubber Co., held at the company's offices at East Palestine, Ohio, on October 1, a very satisfactory year's business was reported. The following officers were elected for the year: President, E. C. McGraw; vice-presidents, R. W. McGraw and John Morgan; secretary, L. M. Kyes; treasurer, John Morgan.

A conference of the branch managers and sales force of the McGraw company was held during the week commencing October 5, when plans were laid for an extensive distribution of product for the coming year. The company reports an exceptionally bright outlook.

BOSTON WOVEN HOSE & RUBBER CO.

At the annual meeting of the Boston Woven Hose & Rubber Co., held early in October, the board of directors was re-elected for the ensuing year, and it was voted to change the by-laws to permit the election of more than one vice-president. This company is experiencing no difficulty in obtaining all necessary supplies of crude rubber at satisfactory prices, and reports that while its European business has been unfavorably affected by the war, trade in general is holding up fairly well, and the directors are optimistic as to rubber trade conditions.

WESTINGHOUSE AIR BRAKE CO.'S ANNUAL REPORT.

The consolidated statements of the Westinghouse Air Brake Co. covering the fiscal year ending July 31 show net earnings for the year of $3,482,993, a decrease of $2,581,784 from the earnings of the preceding fiscal year. The annual inventory totals $5,625,023, against the July, 1913, inventory of $4,307,505, while the cash on hand is given as $2,479,095, and accounts and bills receivable as $3,132,723 against similar items for the previous year of $4,050,495 and $4,865,762. The statement shows a surplus of $5,648,495, which is $145,807 in excess of that shown on August 1, 1913.

MAGNETIC CLUTCHES FOR NATIONAL INDIA RUBBER CO.

The Cutler-Hammer Clutch Co., of Milwaukee, Wisconsin, has just closed a contract with the National India Rubber Co., of Bristol, Rhode Island, through Messrs. Lockwood, Green & Co., consulting engineers, Boston, for two 72-inch H-60 magnetic clutches and one 72-inch H-75 clutch. The 72-inch H-60 clutches will be used on shafts where they will be called upon to transmit 600 H. P. at 60 R. P. M., while the 72-inch H-75 clutch will be employed for the transmission of 400 H. P. at 36 R. P. M.

These clutches are being installed for the protection of workmen engaged in and about the mill, and were selected after a careful investigation of the merits of the various types of mechanical clutch, as well as the features of the Cutler-Hammer product.

RUBBER COMPANY DIVIDENDS.

The Hood Rubber Co. has declared the twenty-seventh consecutive quarterly dividend of 1¾ per cent. on its preferred stock—payable November 2 to stockholders of record on October 28.

The Swinehart Tire & Rubber Co., of Akron, has declared a dividend of 6 per cent. for the coming year—payable quarterly.

The United States Rubber Co. paid on October 31 quarterly dividends of 2 per cent. on first preferred, 1½ per cent. on second preferred and 1¼ per cent. on common stock of the company, to stockholders of record on October 15.

The Electric Hose & Rubber Co., of Wilmington, Delaware, at its annual meeting held October 20, declared a regular dividend of 3 per cent. and an extra dividend of 1 per cent. for the six months ending September 30, making a total dividend paid for the year of 8 per cent.

CHANGES IN CAPITAL STOCK.

The capital stock of the Continental Rubber Works, of Erie, Pennsylvania, has been increased $1,000,000.

The Racine Rubber Co., of Racine, Wisconsin, has increased its capital stock from $1,000,000 to $1,500,000, divided into 5,000 shares of preferred and 10,000 shares common, each with a par value of $100 per share.

The East Palestine Rubber Co., of East Palestine, Ohio, has increased its capital stock from $150,000 to $500,000.

CHANGES IN THE UNITED STATES TIRE CO. FORCES.

O. S. Tweedy, who ever since the formation of the United States Tire Co. has been its Eastern District manager, has been promoted to the position of assistant general sales manager. Mr. Tweedy will continue to supervise the Eastern territory and will also look after the trade of the Central District. He is a thoroughly experienced tire man, having been associated for ten years with the Diamond Rubber Co., for two years with the Federal Rubber Manufacturing Co., as general sales manager, and also with the Continental Caoutchouc Co., as New York sales manager.

Thomas Burton, who has been assistant manager of the Eastern District, has been transferred to Atlanta, Georgia, succeeding T. B. Goodloe, who will join the New York sales force.

George S. Shugart, of the Central District, with headquarters at Chicago, has been given the title of District Manager.

O. S. Johnson, formerly manager of the Buffalo branch, has been transferred to Houston, Texas, to succeed W. F. Gordon as Texas State manager, Mr. Gordon having resigned his position with the company to open an automobile agency at Dallas.

A NEW HARD RUBBER COMPANY.

The India Rubber Co. has just begun the manufacture of hard rubber goods in a newly equipped plant in New Brunswick, New Jersey. It will manufacture hard rubber battery jars—having a capacity of 500 jars per hour—and also caps and barrels for fountain pens and other hollow molded and turned hard rubber material. The plant is in charge of Mr. H. Weida, who has had fifteen years' experience in hard rubber manufacture. For ten years of that time—up to the first of April last—he was manager of the hard rubber department of the Diamond Rubber Co., and had previously been connected with the American Hard Rubber Co. and the Peoples Hard Rubber Co.

CONNECTICUT TIRE FABRIC MILLS BUSY.

The Connecticut manufacturers of tire fabrics are rushed with orders. The Manhasset Manufacturing Co., at Putnam, is running night and day on orders, while the Killingly Manufacturing Co., at Williamsville—a subsidiary of the Goodyear Tire & Rubber Co., of Akron—has found it necessary to increase its equipment and capacity, to meet the demands of the Goodyear company, which takes its entire output. The $50,000 worth of new machinery recently purchased for this plant is being installed and by the first of January it is expected that it will have a producing capacity of 1,500,000 yards of tire fabric a year.

AMERICAN COTTON GOODS FOR EUROPE.

It is reported that some two million yards of cotton duck have recently been sold to Europe for army orders; the trade having been practically all done through a few houses on this side with European representatives. Inquiries have reached here for further large quantities, but in a more or less indefinite shape. English demands have largely been for cotton goods to a certain specification.

THOMAS ALEXANDER FORSYTH.

THOMAS ALEXANDER FORSYTH, president of the Boston Belting Co., was born in Brookline, Massachusetts, April 12, 1852. He is the fourth son of William Forsyth, who came to this country in the early part of last century, from his home in Ayrshire, Scotland.

The family is an ancient one, tracing its ancestry back to Cadet de Forsath, a member in the train of Eleanor, daughter of Raymonde, Comte de Provence, when she went to England in 1236 and married Henry III, King of England. The son, William de Forsath, in 1296, according to the records, took the oath of fealty to King Edward I, of England, who at that time was at war with Philip IV, of France. A straight, unbroken line from these ancestors is on record.

William Forsyth, son of Captain John Forsyth, of the British army, came to Boston in 1828, moved to Brookline and later to Roxbury, to be near the factory of the Boston Belting Co., in which he was a foreman. The family consisted of five sons and three daughters, and as the sons left school they were employed in that factory.

Thomas A. Forsyth, though born in Brookline, was educated in the public schools in Roxbury, which is now a portion of Boston. At the age of fourteen he went into the factory of the Boston Belting Co. and, beginning at the bottom, became successively an experienced workman, foreman, assistant superintendent and superintendent; and on the death of his brother he became president of the company. Knowing the entire details of the business from the receipt of the raw materials to the shipment of the finished product, he is especially fitted for the position, as the steady, continued success of the company and its increasing business fully prove.

THOMAS A. FORSYTH.

Being, like all his family, mechanically ingenious, he, with his brother James, worked out many problems of manufacture and made several important improvements in the machinery of the factory, also solving some intricate problems in the manipulation of rubber and the details of manufacturing the goods for which the company is noted. For several of these improvements he has secured patents.

Two of Mr. Forsyth's traits are worthy of mention, namely, his desire for perpetuating the memory of his family, and his broad philanthropy. Mention has been made in this journal of the beautiful window in memory of the family in a prominent church in Roxbury, and of the baptismal font and rose window dedicated to his sister Margaret; but his great philanthropy, one which has no duplicate in the world, is the gift to the city by the late John Hamilton Forsyth and Thomas A. Forsyth of the Forsyth Dental Infirmary for Children, founded in memory of their brothers, James Bennett and George Henry Forsyth. This magnificent building, which will be opened this month, is one of the most beautiful of all the ornate structures in Boston's Fenway.

It is the outcome of a report of a systematic examination of the children in Boston's public schools, conducted by the late Dr. Gallivan. Of the 118,000 pupils examined over 51,000 were found to have defective teeth, while other defects originating in the mouth brought the total up to 84 per cent. of all defects found.

Andrew Carnegie was asked to found an institution where such defects could be alleviated and cured, or by timely treatment wholly prevented. He was more interested in libraries than infirmaries, and declined, so the opportunity came to this Scotch-American family to found, build and endow a clarity which will be—in fact, already is—world famous.

Mr. Forsyth is greatly interested in art, being a member of the Art Museum and the Boston Art Club. He is vice-president of the Forest Hills Cemetery Corporation, and is on the Board of Overseers of the Poor of the City of Boston. He makes his home at one of Boston's leading hotels. A spacious room has been set apart on the first floor of the infirmary named "The Founders' Room," which will not only contain memorials of the Forsyth family, but will also house his extensive library and works of art. Here doubtless he will spend many of the hours which he may find himself able to spare from his office in the factory in Roxbury.

PERSONAL MENTION.

Henry Spadone, president of the Gutta Percha & Rubber Manufacturing Co., of New York, has been elected a director of the Importers' & Traders' National Bank of that city.

James C. Brady, a director in the United States Rubber Co., and son of the late Anthony N. Brady, was married on October 14, to Lady Victoria May Pery, daughter of the Earl and Countess of Limerick, of Dromore Castle, Limerick, Ireland. The wedding took place at the home of Mr. Brady's brother, Nicholas F. Brady, at "Sea Verge," Monmouth Beach, New Jersey. Mr. and Mrs. Brady are now at the New Greenbrier Hotel, White Sulphur Springs, West Virginia, where they will remain for several weeks.

J. W. Whitehead, for the past eight years assistant sales manager of the California branch of the Diamond Rubber Co., has resigned that position to assume charge of the Pacific Coast business of the Norwalk Tire & Rubber Co., of Norwalk, Connecticut.

Fred Harrington, formerly connected with the Firestone Tire & Rubber Co.'s branch at Philadelphia, has been promoted to the management of the Detroit agency.

A. I. Butler, formerly manager of the Brooklyn branch of the Goodyear Tire & Rubber Co., is now special representative in northern New York territory for the Batavia Rubber Co., of Batavia, New York.

H. M. Applegate, formerly advertising manager for the Lee Tire & Rubber Co., of Conshohocken, Pennsylvania, has become associated, in a similar capacity, with the Rutherford Rubber Co., of Rutherford, New Jersey.

COL. COLT CONDEMNS UNNECESSARY HOARDING.

President Samuel P. Colt, in commenting upon the action of the board of directors of the United States Rubber Co. in declaring the regular quarterly dividends upon the preferred and common stocks of the company early in October, said:

"The dividends having been amply earned and the finances of the company being in easy condition—with $8,000,000 of cash on hand—I think the action of the board not only conservative, but one that is entitled to commendation in these times of war and financial stress. The division of $1,700,000 at this time among the 15,000 stockholders of the company will, I am satisfied, do much good and be most thankfully received."

President Colt also condemned the unnecessary hoarding of money by either banks or other corporations.

MR. FERREIRA VISITS NEW YORK.

Mr. Adelino A. Ferreira, representing Leite & Co., Inc., a prominent rubber house of Pará, Brazil, made a two weeks' visit to New York during the latter half of October. The purpose of this visit was the promotion of trade facilities between Pará and New York through the establishment in the former city of New York bank representation, and negotiations tending toward such arrangements are understood to be now under way as a result of Mr. Ferreira's representations to prominent New York bankers.

PERSONAL MENTION.

Mr. A. Terry, of A. Terry & Co., 8 Haydon street, Minories, London, E. C., who was agent for large Austrian and German concerns in mechanical rubber goods, druggists' sundries and waterproofing, is looking for suitable American connections. He visited the United States the latter part of October and made two connections in other important lines and now desires to correspond with manufacturers in those named above.

Mr. Ernest E. Buckleton, president and general manager of the North Western Rubber Co., Ltd., is in the United States at the present time on a brief visit.

On October 16, Mr. S. George Mills completed twenty-two years of continuous service with C. J. Bailey & Co., prominent Boston rubber goods dealers. Mr. Mills has an exceedingly genial personality, and is one of the most successful retail rubber salesmen in the country.

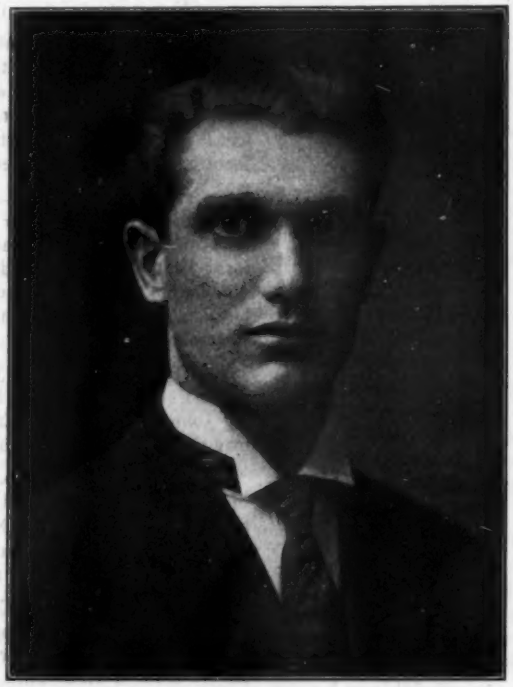
TRADE NEWS NOTES.

Revised plans are being prepared for a factory and office building for the Santo Rubber Co. at Niagara Falls, New York, and bids will soon be taken. The cost of this building, the main section of which will be of brick construction, 82 x 250 feet in area, two stories high, has been estimated at $100,000.

The Safety Signal Co. has been incorporated in New York, with an authorized capital of $200,000, to manufacture devices for automobiles, rubber goods, etc. The Incorporators are Arthur W. Dennen, Stanley C. Fowler and Rebecca Hilliker.

THE GENERAL MANAGER OF THE THERMOID.

THE Stokes family of three and more generations back were iron men; first in England and later in the United States. Of them the most widely known was the late Joseph Stokes, who for years directed the destinies of the great New Jersey Steel & Iron Co. and its five thousand men. Today the descendants of the "iron master" are rubber men, and it is one of them who is the subject of this sketch.



ROBERT J. STOKES.

Mr. Robert J. Stokes, manager of the Thermoid Rubber Co., grandson of Joseph Stokes and son of William J. B. Stokes, was born in Trenton, New Jersey, thirty-one years ago. After attending the State Model schools in his native city he entered Princeton College, graduating with honors in 1904. With a decided taste for mechanics, a good knowledge of chemistry and possessing in a marked degree the family trait of organization, it was natural that he should turn toward rubber manufacture. He therefore entered the Thermoid factory, learned the business from the ground up, became foreman, superintendent and general manager. In 1908 he married the daughter of the late Judge Jonathan Dixon, of Jersey City.

Mr. Stokes is a genial, athletic, popular, six-footer, enthusiastic in his work and, in addition, is more than excellent in such sports as tennis and golf.

THE RUBBER TRADE ASSOCIATION OF NEW YORK.

In the September issue of this publication mention was made of the preliminary steps which had been taken by rubber importers in New York toward effecting an organization for their mutual benefit. The first meeting was held on August 12, with a second meeting two days later at which a committee was appointed to outline a plan for the proposed association.

This committee having drawn up a constitution and by-laws, a meeting was called on October 23 at 80 Maiden Lane, New York, and the association was definitely organized, under the name of the Rubber Trade Association of New York. A constitution and by-laws were adopted; initiation fees and dues were placed at $25 each, and the following officers, directors and committee members were elected:

OFFICERS.—Wm. E. Bruyn, president; Ed. Maurer, vice-president; Wm. H. Stiles, treasurer; Ed. Weber, secretary. DIRECTORS.—H. A. Astlett, Chas. T. Wilson and Ed. Weber, three years each; R. W. Earle, F. R. Henderson, Ed. Maurer and Wm. H. Stiles, two years each; F. G. Gove, Wm. T. Baird, W. G. Ryckman and Wm. E. Bruyn, one year each.

MEMBERSHIP COMMITTEE.—Chas. T. Wilson (chairman), Wm. T. Baird, Wm. H. Stiles, R. W. Earle, A. B. MacNamara, G. Singleton, R. L. Chipman. ARBITRATION COMMITTEE.—Ed. Maurer (chairman), F. R. Henderson, Fred'k G. Gove, Wm. H. Stiles, Chas. T. Wilson.

CONTRACT COMMITTEE.—Wm. T. Baird (chairman), Wm. E. Bruyn, Ed. Maurer, Wm. H. Stiles, E. Korn, Chas. T. Wilson. HOUSE COMMITTEE.—F. R. Henderson, Chas. T. Wilson.

NEW INCORPORATIONS.

B. & K. Specialty Manufacturing Co., October 9, 1914; under the laws of New Jersey; authorized capital, $50,000. Incorporators: Lester W. King and U. Grant King—both of 1101 Greenwood avenue—and Solomon Berman, 153 South Broad street—all in Trenton, N. J. To buy, sell, export, manufacture and assemble rubber goods, electrical goods, and all goods of which rubber is a component part.

Boska Manufacturing Co., Inc., October 14, 1914; under the laws of New York; authorized capital, $100,000. Incorporators: Chas. F. Saunders, 164 Sherman avenue, R. W. Wason, 607 West One Hundred and Thirty-ninth street—both in New York, N. Y., and Simon F. Peavey, Jr., 151 Columbia Heights, Brooklyn, N. Y. To manufacture rubber tires and tire fillers.

DeSilva Rubber Co., Inc., The, October 19, 1914; under the laws of New York; authorized capital, $10,000. Incorporators: A. Martin DeSilva, 210 West One Hundred and Ninth street, Harry E. Fry, 886 Third avenue, and Edward Wagner, 349 East Fifty-second street—all in New York, N. Y. To manufacture rubber goods of all kinds, in particular, rubber heels.

Eastern Rubber Co., October 6, 1914; under the laws of Massachusetts; authorized capital, $90,000. Incorporators: Christopher Brien, 37 Larned street, West Detroit, Mich.; Fred C. Miskelly, 217 Proctor avenue, Revere, and Jane A. Hay, 381 Talbot avenue, Dorchester—both in Massachusetts. To manufacture and deal in rubber goods, coats and garments, boots, shoes, rubbers and all kinds of leather, rubber and cloth goods and novelties.

Goodyear Tire & Rubber Co., Inc., The, October 14, 1914; under the laws of New York; authorized capital, $1,000. Incorporators: James W. Hobbs, 1972 Broadway, George Norris and Francis K. Raynor—both of 115 Broadway—all in New York, N. Y. To represent the Ohio corporation of similar name in Eastern United States, and to deal in its products.

Greenville Fisk Tire Co., The, September 21, 1914; under the laws of South Carolina; authorized capital, $5,000. Incorporators: T. H. Cunningham and M. C. Westervelt. To deal in automobile tires and accessories.

Johnson Pneu-Metal Tire Co., October 2, 1914; under the laws of Massachusetts; authorized capital, $1,000,000. Incorporators: Fred I. Johnson, Prospect street, Fitchburg; James H. Duffy, 18 Tremont street, and William P. Meehan—both of Boston—all in Massachusetts. To deal in tires.

Neptune Packing & Rubber Co., Inc., October 16, 1914; under the laws of New York; authorized capital, $5,000. Incorporators: Katherine V. Du Bois and James F. Du Bois—both of 31 Third avenue, New Brighton—and Frank X. Feury, 16 Haven Esplanade, Tompkinsville—all in New York, N. Y. To manufacture packing and rubber goods, and engineers' and machinists' supplies.

Reliable Tire & Rubber Co., September 25, 1914; under the laws of New Jersey; authorized capital, $24,000. Incorporators: Albert Numbers, Erastus L. Irving and Arthur R. Colvin—all of Trenton, N. J. To manufacture, purchase, trade and deal in automobile tires, inner tubes and all other automobile accessories and other kinds of rubber.

Reliable Tire & Supply Co., Inc., October 5, 1914; under the laws of New York; authorized capital, $5,000. Incorporators: Bluma Sekoson and Estelle Sekoson—both of 934 East One Hundred and Seventy-ninth street, and Louis H. Lex, 429 West Thirtieth street—all in New York, N. Y. To deal in all lines connected with the auto industry.

Safety Auto Tire & Tread Co., September 21, 1914; under the laws of New Jersey; authorized capital, $50,000. Incorporators: Cornelius D. McGiegan, 2 Pearsall avenue, Jersey City, N. J.; Charles Vail, 29 Broadway, and George A. Honnecker, 309 Broadway—both of New York, N. Y. To sell and repair automobiles and to construct and repair and sell automobile rubber tires.

Safety Tire Co., Ltd., The, September 2, 1914; under the laws of Canada; authorized capital, $1,000,000. Incorporators: Joseph Georges Frenette, Arthur Moisan, Achille Begin, Ernest Taschereau and Armand La Vergne—all of Quebec, Canada. To manufacture wheels, rims, tires, etc.

Small Co., F. O., September 30, 1914; under the laws of Massachusetts; authorized capital, $25,000. Incorporators: Frank O. Small, 444 Southampton street; Paul A. Peters, 53 Lincoln street; Walter Bates Farr, Nelson B. Todd and Edward N. Chase—all of 179 Lincoln street—all in Boston, Mass. To manufacture, buy and sell rubber, rubber substitutes and compounds, etc.

Standard Tire & Rubber Co., September 11, 1914; under the laws of South Carolina; authorized capital, $5,000. Incorporators: J. D. Bridges (president and secretary) and S. E. Brown (treasurer). Principal place of business, Greenville, S. C. To buy and sell automobile supplies of every kind and description whatsoever, and bicycles.

Star Tire & Rubber Co., July 31, 1914; under the laws of Wisconsin; authorized capital, $5,000. One of the incorporators being John W. Mart, 2104 East Mifflin street, Madison, Wis. To manufacture, sell and purchase tires.

Southwestern Rubber Co., September 14, 1914; under the laws of Texas; authorized capital, $25,000. Incorporators: Niels Esperson, F. R. Reese and W. N. Grafius—all of Houston, Tex. To buy and sell goods, wares and merchandise of any description by wholesale, or by wholesale and retail.

Weinman Elastic Web Co., Inc., October 17, 1914; under the laws of New York; authorized capital, $15,000. Incorporators: Isak Weinman, 80 Walker street; Leo Weinman, 50 Leonard street—both in New York, N. Y.—and Jos. Sherline, 156 Van Buren street, Brooklyn, N. Y. To manufacture elastic web, cloth and fabric, of which rubber is a component part.

Western Sales Corporation, October 19, 1914; under the laws of New York; authorized capital, $15,000. Incorporators: Chas. H. Taylor, Thomas Catlin and Sherman A. Hooker—all of 1330 Marine Bank Building, Buffalo, N. Y. To manufacture and deal in tire fillers, auto accessories, etc.

Williams Tire & Rubber Co., September 30, 1914; under the laws of Pennsylvania; authorized capital, $5,000. Incorporators: Joseph A. Stabler, Jr., Samuel R. Birch—both of Glassport—and Thomas Young, McKeesport—all in Pennsylvania. To manufacture pneumatic tires out of rubber and rubber products for automobiles, bicycles, etc., and the manufacture of other articles of rubber and rubber products.

THE KING RUBBER CO.

The King Rubber Co., of Hyde Park, Massachusetts, which commenced manufacturing in June last, is at present specializing in seamless rubber gloves, both household and surgical. Equipment is being secured, however, for the manufacture of transparent nipples, a line of which it is intended to produce to replace those formerly imported from Germany and Austria. The production of other seamless rubber goods will follow, including tobacco pouches, bathing caps, etc. The company reports excellent progress and an encouraging outlook. W. W. MacDonald, formerly technical expert with the Davidson Rubber Co., of Boston, is associated with this enterprise. M. D. Kingsbury, formerly purchasing agent for the Davidson company and for the Boston Woven Hose & Rubber Co., is in charge of the office; while J. A. Crowley, well known in the drug and sundry lines, is the company's sales representative in New York and vicinity.

GOOD RECORD FOR "VACUUM CUP" TIRES.

The test of Oilproof Vacuum Cup tires inaugurated last March has recently been completed and results in a fine record, the total distance recorded for the nine tires on trial being 60,772 miles, or an average of 6,752 miles for each tire. This test was made under the direction of the laboratory of the Automobile Club of America, official observers of the club accompanying the drivers of the cars on which the tires were used, and all the tires were purchased by the club, from different dealers in several eastern cities, so that only stock tires should be employed in the test. The average mileage for tires used on wire wheels was 5,470; on wood wheels 8,076.

The Pennsylvania Rubber Co., of Jeannette, Pennsylvania, which makes the Vacuum Cup tire, has brought suit against the Dreadnaught Tire & Rubber Co., of Baltimore, Maryland, in an effort to restrain the latter company from use of the terms "Vacuum Tread" and "Vacuum Cup Tread" in connection with its tire product.

THE UNION RUBBER & SUPPLY CO. TAKES LARGER QUARTERS.

The Union Rubber & Supply Co., of St. Louis, Missouri, announces its removal from 410 Market street to larger and more conveniently located quarters at 18 South Broadway, in the district known as the "White Way." This company, which has made continued progress since its establishment thirteen years ago, carries a complete line of mill supplies, including balata and leather belting; fire department equipment; automobile tires, and a full line of the Revere Rubber Co.'s rubber belting, air and water hose, valves and sheet and piston packings.

RECEIVER APPOINTED FOR OVERMAN TIRE CO.

A petition in bankruptcy has been filed against the Overman Tire Co., Inc., and a receiver appointed by the court, authorized, under a bond of $5,000, to continue the carrying on of the business for a certain period. The company's liabilities are given as between $60,000 and $70,000, and the assets $60,000. This company, located at 250 West Fifty-fourth street, and with salesrooms at 1855 Broadway, New York, was incorporated in February, 1913, under the laws of Delaware, with a capital stock of $3,000,000.

THE NELSON SURF COASTER.

The cut below shows a new device for surf coasting introduced this season at Long Beach, California, and reported to have become quite popular at that resort. While designed primarily for sport and amusement, it may be used also as a safety device in case of cramps or accidents. This coaster

is made with rigid frame and air-tight compartment entirely covered with waterproof canvas. It varies in size from 2 to 7 feet in length and from 10 to 18 inches in width and weighs from 3½ to 9 pounds. [Nelson & Woods Manufacturing Co., Long Beach, California.]

TRADE NEWS NOTES.

The Peerless Tire & Rubber Co. has been incorporated at Louisville, Kentucky, to carry on a jobbing and distributing business in tires and tubes, rubber accessories and mechanical rubber goods. It is located at 624-6 South Third street, has a capitalization of $15,000 and is controlled by men thoroughly acquainted with the rubber goods trade.

The New York branch of the Braender Rubber & Tire Co., of Rutherford, New Jersey, will soon remove from 1987 Broadway to larger quarters at 250 West Fifty-fourth street.

I. Novick & Co., manufacturers of coats and raincoats at 133 West Twenty-first street, New York, have filed schedules in bankruptcy showing liabilities of $50,331, and assets amounting to $13,100.

At the autumn festival held October 17 in connection with the Grill dances at the Plaza Hotel in New York, a toy balloon blowing contest was one of the special features of the evening's entertainment.

A method of effecting tire economy which can easily be followed by motorists generally has been adopted by an ingenious tire user. He places a worn-out casing over a good one, making slits across the outer casing about 4 inches apart, to give a non-skid effect.

A fourth story has been added to the brick and concrete warehouse on Schuylkill avenue, Philadelphia, owned by the Philadelphia Rubber Works Co. The cost of this addition is estimated at $15,000.

The Williams I X L Tire & Rubber Co., a corporation capitalized at $300,000, has purchased a site at Buena Vista, Pennsylvania, for a plant to manufacture automobile tires and other rubber goods.

The York Co-operative Tire & Rubber Co., of New Orleans, Louisiana, is said to be looking about for a suitable site for a factory for the manufacture of tires and a new tire fabric. Leslie Dunn, president of the company, recently visited Canton, Ohio, with this end in view, the proposed plan calling for the erection of a factory equipped to turn out 2,000 tires daily, and providing that only automobile owners shall be stockholders in the concern.

Insulated wire and cables to the value of $127,697 were exported from the United States during July of the present year. Similar shipments for July, 1913, amounted to $147,948.

The plant of the Patterson Rubber Co. at Lowell, Massachusetts, will be sold at public auction on October 31 as a result of foreclosure of the mortgage held by Francis H. Appleton, one of the organizers of and principal stockholders in the concern. This is a comparatively new plant, and it is believed that work will not be interrupted but that several of the present stockholders will unite in reorganizing the company.

A test of car and tire endurance was recently made by Henry J. Adams, of Fostoria, Ohio, on a 3,000-mile trip, which included all the principal cities from Cleveland to Montreal, thence to Boston, Baltimore, and across the Alleghany Mountains into West Virginia and back into Ohio. This trip was made in a Reo car equipped with tires made by the Miller Rubber Co., of Akron, Ohio. At the end of the trip Mr. Adams reported as follows: "The tour lasted twenty-five days, and the tires are good for another trip."

C. A. Dunham, for the past three years manager of the Pittsburgh branch of The B. F. Goodrich Co., has been promoted to the management of a larger branch at Cleveland, Ohio. Before leaving for this new field Mr. Dunham was presented with a diamond scarf pin by the employes of the Pittsburgh branch. The position vacated by his transfer will be filled by F. E. Titus, formerly located at Buffalo, New York.

MR. C. E. SIEGFRIED.

Mr. C. E. Siegfried, who, as stated in our October issue, has become the Akron representative of Charles E. Wood, the crude rubber broker of New York, has had quite an extended experience in the rubber industry. For eight years he was connected with the Goodyear Tire & Rubber Co., being for three years in charge of their molded goods sales department. He has also had charge of the same department in the Miller Rubber Co. He has traveled extensively in the West, where he is well acquainted with the rubber trade.

C. E. SIEGFRIED.

EXHIBITORS AT THE AUTOMOBILE SHOWS.

At the automobile shows to be held by the National Automobile Chamber of Commerce in New York and Chicago, under dates of January 2-9 and January 23-30, respectively, the following accessory manufacturers will have exhibits: Double Fabric Tire Co., Auburn, Indiana; Voorhees Rubber Manufacturing Co., Jersey City; A. Schrader's Son, Inc., Brooklyn; C. A. Shaler Co., Waupun, Wisconsin; F. S. Carr Co., Boston; Leather Tire Goods Co., Niagara Falls, and the Pantasote Co., New York.

TRADE NEWS NOTES.

W. T. Kyle has joined the sales force of The Okonite Co. at the company's general office, 253 Broadway, New York City. Mr. Kyle has been for the past six years connected with the Duplex Metals Co., as district sales manager.

A voluntary petition in bankruptcy was filed on October 19 by the National Insulate Co., of Springfield, Massachusetts, with liabilities $13,839; assets $7,610.

The Revere Rubber Co., of Providence, Rhode Island, has received a large order for solid tires to equip trucks being made for the French and Russian governments.

The United States Circuit Court of Appeals has affirmed a decree of the District Court in an opinion handed down in the suit of the Haskell Golf Ball Co. against the Sporting Goods Sales Co., for infringement of Patent No. 622,834, issued April 11, 1889, to Work & Haskell, on a golf ball. The court finds the patent of the complainant was valid and was infringed by the defendant. The patent covers a composite ball of rubber, the golf ball used for fifty years prior to that time having been made of gutta percha.

The Allen Auto Specialty Co., of New York, has brought suit against E. G. Baker, of the same place, for infringement of the Nathan tire case patent No. 799,622 owned by that company. Mr. Baker is the New York representative of the Gilbert Manufacturing Co., of New Haven, Connecticut, which manufactures tire covers, fleece-lined rubber covers and other accessories.

The Rubberset Co., Ltd., has been incorporated at Toronto, Ontario, with a capital stock of $40,000 to manufacture rubber goods. Among the incorporators are J. W. Pickup, James Aitchison and Duncan McArthur.

The Chester Rubber Tire & Tube Co., of Chester, West Virginia, has purchased additional ground and will enlarge its plant.

The F. O. Small Co. has been incorporated in Boston with a capital stock of $25,000 to manufacture and deal in rubber pulp, leather, etc.

The Atlas Rubber & Belting Co., of Cincinnati, Ohio, has increased its capital stock from $1,000 to $10,000.

The H. Phillips Rubber Co., of New York, has been petitioned into bankruptcy, with liabilities of $12,000, and assets valued at $8,000.

At a meeting of the consuls general in New York of Latin American republics, the Latin American Consular Association of New York was formed, the aim of which is to promote trade between the United States and the countries represented. Fifteen of the twenty Latin American consuls general in New York are members of this new association.

Employes of the Firestone Tire & Rubber Co., Akron, have contributed $68 to the Red Cross Fund for the aid of the European war sufferers.

The Avon Tire Co., of Lynn, which recently purchased and moved into the plant formerly occupied by the Sagamore Rubber Co. at East Saugus, Massachusetts, is now operating, with a force of about 100 employes, turning out a line of solid tires.

The American Steel & Wire Co., which manufactures rubber covered and other wires, is planning the erection of a one-story building at the north works of its plant at Worcester, Massachusetts. This building will be 72x108 feet in area, and will be used for storage purposes.

A cable from London on October 1 stated that the embargo on the exportation of aniline oil had been raised.

In a recent address by the buyer for a prominent Boston shoe concern, manufacturers and retailers were jointly advised to make an effort to continue rubber soles and to push felt soles to the front "as a fad for the faddists who can afford them." It was stated that if 10,000,000 pairs of rubber or felt sole shoes could be sold next season it would greatly relieve the pressure on sole leather.

The Livingston-Hinkle Rubber Co. has been formed at Columbus, Ohio, by G. E. Livingston, former manager of the B. F. Goodrich Co.'s branch in that city. The new company will deal in automobile tires and accessories.

The Boston Rubber Shoe Co., of Malden, Massachusetts, is about to open a carriage cloth department, which will turn out a specially high grade of rubber ducks and drills, having ample facilities for manufacturing large quantities at short notice.

The Detroit Insulated Wire Co., of Detroit, Michigan, is enlarging its manufacturing facilities by the erection of two new buildings, respectively, 57x138 and 35x50 feet in area. The general offices of the company will be located in one of these additions, while the present office quarters will be used for factory purposes. Additional machinery equipment for the new buildings has been arranged for.

The Consumers' Accessories Co., of Indianapolis, has placed on the market a tire built exclusively for Ford cars. This is known as an over-size tire, the reason given being that the fabric and tread are 25 per cent. heavier than the ordinary tire of this type. It is made in two sizes only—30x3 and 30x3.5 inches—specialization in these two sizes minimizing cost.

The Parsons Non-Skid Co. and the Weed Chain Tire Grip Co., of New York, have secured an interlocutory decree against the Leather Tire Goods Co., also of New York, to restrain the latter company from marketing a device held to be an infringement of the Weed patents.

THE RUBBER TRADE IN AKRON.

By Our Regular Correspondent.

THE output of the Akron rubber factories for the past month is roughly estimated to have been about 50 per cent. of their maximum product. One or two plants are running on practically full time, with a full quota of men, while others are running on only part time.

This city has been the center of reunions and conventions during the month. Early in October there was a legislative reunion, when many of Ohio's legislators and officials interested in safety measures visiting the city were shown through the factory of The B. F. Goodrich Co. in an unofficial inspection of the safety devices and measures adopted by this company for the protection and welfare of its employes.

Then there was the annual sales convention of the Firestone Tire & Rubber Co., attended by about 250 out-of-town representatives. The branch managers arrived Tuesday, the 13th, and after a day spent in planning for the larger convention of the following two days, were tendered a banquet at the Portage Country Club. By the morning of the 14th all the regulars had arrived. The day was fully occupied, speeches of welcome being followed by general discussions of such important subjects as carriage, cycle, motor and pneumatic tires and rims, and by a visit through the tire factory. On Thursday, the 15th, a visit was made to the rim plant, and the subjects considered in convention on this date included credits, export business, branch efficiency, advertising, the European situation and salesmanship. The dinner in the banquet hall of the Portage Hotel, which concluded the convention, was attended by about 400 Firestone men. One new feature at this year's convention was the publication by the company of a special newspaper containing the news of the proceedings. This was a paper called "Co-op," in regular newspaper form, two numbers containing four pages each, while a third had eight pages. Another innovation was the taking of motion pictures of the convention, 1,000 feet of film being used in this manner.

Some interesting figures have been compiled by the rim department of this company, from which we learn that in the past year's production of Firestone rims 12,000 tons of steel was used; that 400 mechanics and 16 electric welders are employed in this production, which requires 150,000 square feet of floor space, with 15,500 square feet of storage for the raw steel stock; that 1,000 box cars are utilized in carrying away a season's output of rims, and that from 10,000 to 50,000 rims are always carried in stock at the factory for immediate delivery.

Announcement has been made that the Firestone company will, this winter or in the early spring, build a three-story office and storage building on the site of the present office.

* * *

A letter of recent date addressed by Thomas F. Walsh, president of the Swinehart Tire & Rubber Co., of Akron, to an inquirer regarding the effect of the war on the rubber trade, contains the following interesting paragraphs:

"It is difficult at this time to state definitely just what the outcome upon the rubber trade, on account of the European war, will be. I am very optimistic myself, and look forward to an unusually prosperous year of 1915.

"The only uncertainty now is the source of the crude rubber supply. We had hoped that the English and French control of the sea would have cleared this up before now. There are two uncertain elements. One is our lack of merchant marine, and the other is the lack of trade between this country and the countries supplying rubber.

"As it is now, it is necessary for rubber to come through Europe, or vessels to go empty to secure the rubber, which makes the freight carrying cost and insurance very high. We will gradually shape ourselves to supply the things they want in exchange for the rubber, which will relieve the situation.

"It seems like America's opportunity. If our manufacturers and business men go about it properly, and seek to secure the trade of these Eastern markets, by furnishing to their people the things they want and need, in exchange for what we want, and not try to establish an unhealthy condition by forcing upon them something we have a surplus of and they do not want, we will establish a trade relation that will be lasting and beneficial."

* * *

The Williams Foundry & Machine Co. has been exceptionally busy and is adding a one-story building 60 x 100 feet in area to its plant, at an estimated cost of $12,000.

* * *

The new addition of the Adamson Machine Co. is nearing completion.

* * *

The Miller Rubber Co. has recently perfected and patented a valve to be used in toy balloons which permits of inflating and deflating as frequently as desired. By simply pressing the neck of the balloon the air is released and when retained in normal position the balloon remains inflated indefinitely. Composed of a hard circle of rubber, made cup shape in size to fit the neck of the balloon, with a small loose flap at the base, the whole is so simple that chances for it to become ineffective are reduced to a minimum.

SALES FORCE OF THE FIRESTONE TIRE & RUBBER CO., AKRON, AT CONVENTION.

This company advises all car owners who are about to store their cars for the winter to remove all tires from rims not of the quick detachable variety, and after slightly inflating both tire and tube wrap each in cloth and place it in a dry room having a temperature of about 50 degrees, the exclusion of light tending to preserve the life of the tire.

* * *

George S. Andrus is acting general manager of the Superior Tire & Rubber Co., which was lately incorporated under the laws of Ohio, with a capital stock of $125,000. The company is at the present time having its inner tubes manufactured, but is using its own compounds and has its own sales agency. In the near future it expects to have a plant of its own in Akron, when it will take up other lines of rubber production.

* * *

All Southern branches of the Goodyear Tire & Rubber Co. have been instructed to purchase a bale of cotton and to exhibit it in their windows.

* * *

About 450 members of the Goodyear sales force have just arrived in town on special trains to attend the three-day convention which commences October 29.

THE RUBBER TRADE IN BOSTON.

By Our Regular Correspondent.

WHILE the various branches of the rubber manufacturing business differ widely as regards activity, the whole trade may be pronounced nearer normal than many other lines of industry. Crude rubber is being bought, and deliveries on contract are going forward, though the total consumption of crude gum is estimated at less than is usual at this season. The past season has been an excellent one for automobile tires, and while there is a curtailment of production at this time, such is to be expected at the close of the summer season. The unusually pleasant weather has extended pleasure riding much later than usual, with a corresponding wear and tear on tires, which must result in a greater demand, if not this fall certainly next spring, when general re-equipment is due.

The season in New England has made an extensive demand for garden hose, which has in its turn resulted in advance orders for spring deliveries far above the average. Belting and mechanical goods are not in so great demand. The call for druggists' soft goods is somewhat under the average. The clothing men have felt the effects of a tardiness on the part of the weather clerk to furnish the usual September and October rains, but a demand is noted for rubberized cloth for export, presumed to be for making up into ponchos and for covers for use on the European battlefields. The same is true of the rubber footwear business. The makers of this line have been busy right along, and orders which should have come in last spring and summer are now being received. Some factories have been shipping unusual quantities of boots abroad, which are rumored to be for the use of the British army. One company is making arctics on a government contract for the United States army. Several manufacturers of rubber soles report steadily increasing business, showing that rubber is in part relieving the leather scarcity in the shoe business.

* * *

It was "some belt" which was recently shipped by the Boston Belting Co. to the France Stone Co. This was a conveyor belt

CONVEYOR BELT MADE BY BOSTON BELTING CO. AND PRESIDENT THOMAS A. FORSYTH.

such as is used for carrying crushed stone, ore, coal, etc. The belt was 893 feet long, all in one piece. It was 36 inches wide, and was of 8-ply with extra thick rubber cover. Its size can be appreciated by the picture here shown with President Thomas A. Forsyth standing beside it. The belt weighed 12,000 pounds and its value was more than $5,500.

* * *

Frederic C. Hood, general manager of the Hood Rubber Co., is one of the many American tourists who were in Europe at the time of the declaration of war. While he belittles his personal experiences, which were not sensational, as were those of less experienced travelers, still he tells an interesting story of his hasty trip across the continent from Italy to Norway and across the mine-infested North Sea to Scotland.

With his wife and son, he was touring the Dolomites in a motor car he hired in Munich when he first heard the rumors of coming war. These did not prevent the party from going to Venice, for three days' sightseeing. As they motored north through Verona in Italy, and Botzen and Landeck in Austria and thence to Munich, they saw a restlessness which foreboded trouble. From Munich they proceeded by rail to Dresden, where on July 31, things looked so serious that Mr. Hood decided to get out of Germany as quickly as possible, so arranged to take the five o'clock train to Berlin. Finding a train an hour earlier, they took passage in that, and arrived at the German capital on nearly schedule time, while the next train did not run for several days.

Berlin was in a fever of excitement. Every German knew where he was to report and what he was to do. The streets of Berlin were filled with soldiers, and with weeping women. Savings banks had hundreds of people in line withdrawing deposits. Taxicabs were breaking the speed laws. There was a great undercurrent of excitement, which the younger men showed by singing and marching and cheering. Tourists were hastening to get through Germany and Holland to England or America. The trains were being reserved for the army. Mr. Hood decided that a northward journey would be more practicable than going west, thinking that the "longest way round was the shortest way through." At the station the broad platforms were piled high with baggage; but a part payment in advance, and the rest when the work was done, enabled him to get his own trunks aboard the train, and the Hood family started for Copenhagen, where they arrived only a few hours late.

In Copenhagen the excitement was intense. Reports were current that the North Sea had been mined, and that the German fleet might soon bombard Copenhagen. Many steamship sailings to England had been abandoned. At the American Consulate hundreds of tourists were clamoring for assistance to get home or to England. Many Americans were booking steerage passages on the Scandinavian Line, but Mr. Hood decided to go to Christiana, Norway. Here he found the Norwegian army was mobilizing and transportation still uncertain.

When he tried to buy railroad tickets, he found he could get no money changed, as all the ticket agencies were out of cash. But a back door of a bank, the correspondent of the American Express Co., whose travelers' checks he had, was finally found, and plenty of money procured after a patient series of calls on the paying tellers. Thursday morning early, they left Christiana for Bergen over the beautiful Scenic Railway of Norway, and on the train he had good luck. A new law was passed that "alien enemies" could not land in England, and there were Germans on the train who had engaged passage to England, and who could not go to England, so Mr. Hood secured their reservation. A sample of the many "extra" expenses may be cited here, as the one-way fare on this boat was $55, while the regular round-trip fare is $32. The boat usually sails from Bergen to Hull, England, but on account of the mines the boat went to Leith, the port of Edinburgh, Scotland.

That trip was one of the worst experiences Mr. Hood ever encountered. The sea was rough. There were enough vague

rumors of mines to keep the nerves on edge, and in the middle of the voyage a submarine suddenly appeared near the boat and investigated the nationality of the steamer. The culinary department was in a chaotic state, the regular help having been called to arms, and their places taken by incompetents. Mr. Hood went into the kitchen and obtained food for himself and family.

When the boat arrived at Leith, it was thought their troubles were over. Not so. Orders had come that none but British subjects could land without permission from the Home Secretary's office in London. There were 40 Americans and two Belgians on board, and the boat was to sail on the return trip at midnight. A sentry with fixed bayonet prevented any one leaving the boat. The customs officers could do nothing, and the consular office was of no avail. Then Mr. Hood and others endeavored to induce the Chief of Police to arrest the whole party, and thus save them from deportation; but the police were powerless. Finally, after a delay of over ten hours after arrival at Leith, a telegram came from London and the passengers were allowed to land on British soil late Saturday evening. Mr. Hood went to London by sleeper, arriving there Monday morning, eight days after departure from Berlin. Even at that, he was ahead of some of those who took the "direct" route between the two cities. Not so exciting as some other Americans' experiences, but sufficiently so.

* * *

The Atlantic Rubber Co., now at Hyde Park, has commenced the construction of a factory near Atlantic Station in Quincy. The plans, which are from the office of J. O. De Wolfe & Co., the well known rubber mill architects, call for a three-story brick building of mill construction and so designed that additions can be made, when desired, in conformity with the original style. This company manufactures rubber-coated fabrics for the cutting-up trade, sheeting and molded goods, besides some specialties in the latter line. Mr. Alfred A. MacLaren is treasurer and manager.

* * *

The boot and shoe mill of the Apsley Rubber Co. at Hudson was shut down one week for the purpose of installing heavy electrical machinery. For some time past all the outlying departments of the plant have been operated by electric power. With the completion of this installation the main mill shafts and all power for the boot and shoe departments are run by motors. The entire plant now has electric power. One of the motors just installed is of 500 h. p. and weighs over five tons.

The company will effect important economies in its power department resulting from the present installation, together with increased efficiency and uniformity of speed.

* * *

To meet the growing demand for a substitute for sole leather, the Tyer Rubber Co., of Andover, has been engaged in experimental work for several months past in an effort to produce a vulcanized fibre compound which will fulfil all the requirements of leather. The experimental work has now reached a stage where the company feels justified in offering to the shoe trade a material which is claimed to be fully equal in every respect to sole leather.

This compound can be manufactured by exactly the same methods now employed in connection with sole leather and as its various ingredients can be obtained in unlimited quantities, the price will not be subject to the wide fluctuations often prevailing in the sole leather market.

* * *

It may be remembered that James Brien, proprietor of the Eastern Rubber Co., of this city, was killed in an automobile accident a few months ago. Since that time the business has been continued by the estate of Mr. Brien, until last month, when a corporation was formed under the name of the Eastern Rubber Co., with an authorized capital stock of $90,000 in 900 shares of $100 each. The officers and incorporators are: Christopher Brien, president; Fred C. Miskelly, vice-president; Harriet C. Brien, treasurer, and Jane A. Hay, clerk. The corporation assumes all indebtedness of the business.

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Joseph L. Whiton, salesman for the Congress Shoe and Rubber Co., has become mayor of the neighboring city of Quincy, for the unexpired term of the late Mayor Miller, who died early last month.

THE RUBBER TRADE IN CHICAGO.

By Our Regular Correspondent.

IN some branches the rubber business has improved during the past month; in other respects it is not so good. For the most part the improvement has come in the rubber tire business. This is due to the fact that the weather throughout the Middle West has been ideal for motoring. There have also been half a dozen big races during the month, which aroused great interest and gave an added impetus to the growing sport of motoring. The prize races at Indianapolis, Elgin and Galesburg brought out a large number of cars and served to revive demand in the tire line.

While the automobile tire business has prospered, however, the mechanical rubber goods lines and the rubber boot and clothing lines have not been meeting with such a heavy demand. The reason is not far to seek. Industrial conditions throughout the West and Middle West are far from being as good as they might be. Many factories, owing to the war, are not running full force, while a few of them have closed down. The mines are not working as briskly as usual at this time of the year. This means that the sales of rubber belting and packing have decreased. The rubber clothing business has been a little off owing to the fact that the weather has been too mild to move goods from the shelves of the dealers. As a result the jobbers are marking time and waiting for wet weather to set in.

A. Romain, sales manager of the Quaker City Rubber Co., discussed the situation with his usual optimism, but was frank in admitting that conditions in the mechanical rubber line were a little unfavorable just at present. "But," he added, "I believe that the sunny side for mechanical rubber houses in this city lies in the possibilities of export trade, owing to war conditions. We have recently received some letters of inquiry from large buyers—I will not say from where, but they required translation—and these have served to show us that there is more trade than has been suspected waiting for rubber manufacturers of this country if they care to go beyond the national borders to capture it."

* * *

L. L. Murphy has succeeded W. E. Carver as sales manager of the Rubber Distributing & Manufacturing Co. Mr. Carver is no longer connected with the firm, but will not leave the rubber business, it is understood. In discussing the situation in the rubber boots and clothing line, Mr. Murphy made the following points: "The dealers carried over very few goods through the summer. This is true throughout the Middle West. While things are a little slow right at this time, I expect business to improve with a rush as soon as we have some bad weather. One year ago today we had snow. We have not had any snow thus far this year, and the weather has been clear and mild. With the first rainy spell the stocks of the dealers will be depleted to the extent that they will be forced to place orders at once. Just at present while waiting we are getting ready for the rush that is certain to come."

* * *

J. E. Duffield, manager of the Thermoid Rubber Co., went to Galesburg, Illinois, to attend the auto races recently held in that

city. He had a particular interest in these races, as two of the leading drivers, Bob Burman and Ralph De Palma, used "Nassau" tires on their machines. Mr. De Palma won the race at Indianapolis, which is one of the big sporting events of the West, with these tires, while Bob Burman has used them for two years, winning in many of the events he has entered. Mr. Duffield believes that there is great advertising value in auto races. "Nothing calls the attention of the people to tires like the front page newspaper accounts of auto races," he said, "for it is upon tires that a race largely depends. Without the proper sort of rubber in tires, trouble is certain to come."

* * *

L. L. Bucklew, who was recently appointed special representative of the Department of Commerce of the United States Government, was in the city last week talking with a number of the leading rubber men. He leaves in a few days to spend a year or more in the study of commercial conditions in South America. Local rubber men told him, as well as they could, just what it was that they wanted to learn. Upon his return Mr. Bucklew will file his report with the government, and the result of his labors will be made public. Rubber manufacturers here are all the more interested in Mr. Bucklew's mission owing to the fact that an all-water route from Chicago to the Gulf of Mexico will soon be a fact. It requires only the deepening of 60 miles of canal which forms the connecting link between the Chicago river and the head-waters of the Illinois river.

* * *

W. H. Salisbury & Co., Inc., have just entered upon the sixtieth year of their career as rubber merchants in this city. This company has been continuously in business since its establishment in 1855, though many changes have of course occurred in its personnel. A folder recently distributed by the company, calling attention to the various lines of rubber goods—hose and accessories, belting, packing, tiling, drug and hospital supplies, molded goods, etc.—carried in stock, announces that the company is "59 years old and proud of it. Not just proud of years, but of the fact that we have so long enjoyed the confidence of the trade," and states that they propose to round out their sixtieth year with nothing left undone for the good of their customers.

* * *

Ross White, formerly manager of the Goodyear Tire & Rubber Co. branch at Columbus, Ohio, has been transferred to Chicago as manager of the branch in this city; while C. M. McCreery, former Chicago manager, has been promoted to the position of assistant to H. P. Ziegler, manager of the Western district.

* * *

I. W. Penniman has been appointed Western sales manager of the Walpole Tire & Rubber Co., of Walpole, Massachusetts, with headquarters in the Brooks building, this city.

THE RUBBER TRADE ON THE PACIFIC COAST.

By Our Regular Correspondent.

THE tire manufacturing industry on the Pacific Coast is soon to be extended by the addition of another factory competing for the business of this territory. The Halliwell Co., formerly agent for the Knight Tire & Rubber Co., of Canton, Ohio, has decided to go into the manufacturing end of the business, making a line of motor vehicle tires but specializing in sizes for Ford cars. D. W. McElligott, manager of the company in San Francisco, states that it is for the purpose of developing home industry and at the same time keeping a big share of the tire business on this coast that the company has made plans to manufacture Halliwell tires here.

* * *

The Fisk Rubber Co., of Chicopee Falls, Massachusetts, early in October opened its tenth store on the Pacific Coast, at 725 South C street, Tacoma, Washington. This branch is in charge of C. H. Underberg, who was formerly manager of the San Francisco office.

The year 1915 will probably see a larger number of visitors in the West than ever before and it is the aim of the Fisk company, through its various branches, to be in a position to supply all the requisites of the automobiling tourists as well as information regarding routes, road conditions, etc. The resorts along the San Joaquin & Eastern Railroad to Big Creek, Kings River Canyon and General Grant Park, as well as the north fork of the San Joaquin, are said to be attracting large numbers of motorists, and the views to be seen from the roadways on the sides of the mountains are described as magnificent.

In support of his claim that the automobile is not only an efficient, but an economical means of transportation, Mr. H. B. Pratt, Pacific Coast manager for the Fisk company, cites an instance where a jury in a certain case, being tried in Seattle, and a number of witnesses were ordered taken from the court room to inspect a road a mile and a half long not far from the city. The expense of such a trip by hired automobiles would have been $79.50, but a similar previous trip having been criticised, this one was made by street car, at a cost of $205.50.

* * *

John S. Weise, for several years manager of the United States Tire Co.'s Los Angeles branch, has been appointed sales manager of the local factory of the Winton Motor Car Co.

* * *

The Jones Auto Supply Co., of Oakland, California, has taken an agency for Republic tires. The products of the Republic Rubber Co. have until now been handled exclusively in this city by the Imperial Garage & Supply Co., but as the interest in motoring increases it becomes necessary also to increase distributing facilities for tires and other accessories.

THE RUBBER TRADE IN RHODE ISLAND.

By Our Regular Correspondent.

THERE has been comparatively little change noted in the rubber industry in this state during the past month, the various plants, according to the lines of goods produced, experiencing diversified conditions. There is a very optimistic feeling among the managers of the local plants, however, that there will be a general reawakening of business within a short time that will start up the idle machinery that is to be found in some of the plants. The rubber shoe workers are running full time, with orders ahead, and there has been a slight improvement in the wire departments. The automobile accessory makers are still behind normal, but are looking for an early improvement. The makers of special surgical and druggists' supplies are reported as being very busy, with some orders coming in from abroad that will keep them going for the rest of this year, at least.

* * *

Materially interested in everything that pertains to the settlement of the difficulties of the Walpole Tire and Rubber Co. because of the close affiliation of the affairs of this concern with those of the Atlantic National Bank, of this city, and the Consumers' Rubber Co., of Bristol, the action of the Federal Court, at Boston, on October 19, in again postponing the sale of the Walpole plant, is generally commended.

The matter of fixing the date for the sale of the Walpole company property was put forward, upon the recommendation of the receivers, in concurrence with counsel of the stockholders, to January 4, 1915. Leave was granted to interested parties to bring the matter before the court on ten days' notice. The

hearing was held before Judge Dodge in the United States District Court in Boston.

The receivers stated that the business of the company had continued to be good, both orders and sales, as a whole, being in excess of the corresponding months of last year and that prospects are excellent for a continued good business during the winter months. Permission was granted the receivers, upon their petition, for the payment of a fourth dividend to the creditors, amounting to 10 per cent., for which they have in hand the sum of $125,000. This makes a total of 22 per cent. that will have been paid in liquidation of the approximately $1,250,000 claims that have been allowed against the company. Dividends of 4 per cent. each were paid on March 14, June 1 and July 27.

On the subject of a sale of the Walpole property, counsel for the receivers stated that they had consulted numerous financial interests and were told that conditions are not likely to be propitious for selling the property for some months to come.

* * *

A new factory building is being erected on land between Brook and Whitehill streets, in Taunton, to be occupied as a new home for the Taunton Rubber Co. The new building will be more than 100 feet long and 50 feet wide, and will also have a large wing, the whole structure being of brick and glass. Facilities will be afforded for more than a hundred operatives, and the capacity will be not less than 24,000 rubber heels a day.

* * *

The Hospital Rubber Co., of Attleboro, has been incorporated, with a capital stock of $100,000, and has removed to larger quarters in the Bushee factory building, where it is occupying the ground floor. The incorporators are George J. Kelley, Mrs. Geraldine S. Kelley and Miss Lydia D. Peck.

* * *

The employes of the Revere Rubber Co. have organized a six-team shop bowling league, representing the Accounting, Cost, Thread, Solid Tire, Stock and Shipping departments.

* * *

Seven Oaks, the residence of Former-Governor Augustus O. Bourn, of the Bourn Rubber Co., at Bristol, was considerably damaged by fire recently. Mr. Bourn was at his office in this city, while Mrs. Bourn, who is an invalid, was in the house, but was assisted to a place of safety, although her nurse was nearly overcome by smoke.

* * *

On October 11 about 100 employes of the Davol Rubber Co., of Providence, Rhode Island, with their friends, held an outing at Emery Park, not far from that city. Outdoor sports were a feature of the outing, including a baseball game in which the team composed of married men were victorious over their unmarried rivals. The outing was an all-day affair, and at 12:30 the party was served with chicken chowder, while at 4 o'clock they enjoyed a roast chicken dinner. Musical performances at the Colonial Casino and the Old Tyme Inne were attended by many members of the party.

* * *

The factory of the National India Rubber Co. at Bristol, is shipping a large lot of rubber shoes, several carloads leaving the works each day. The wire insulating business of the company is growing better as the fall advances, and already large shipments are being made of this product.

Manager Chris. A. Ostby of the company's baseball team was recently presented with a handsome silver loving cup by the members of the team who played during the season. The names of all the members of the team are engraved on the cup.

A NEW RUBBER GOODS FABRIC.

A new fabric for which superiority is claimed is soon to be employed by the Goodyear Tire & Rubber Co., of Akron, Ohio, in certain of its products. This fabric is the invention of Lawrence A. Subers, of Cleveland, Ohio, and is described as a "laminated cohesive interwoven fabric."

TRADE NOTES FROM TRENTON.

THE Roberts Aeroplane Co., which has been incorporated under the laws of this state, will erect a factory at Blackwood, New Jersey, for the construction of biplanes.

* * *

The Reliable Tire & Rubber Co. has been incorporated here to manufacture and deal in automobile tires, tubes and other rubber products. The capital stock of the company is $24,000, and the incorporators are: Arthur R. Colvin, Erastus L. Irving and Albert Numbers.

* * *

The Braender Rubber & Tire Co. is building a four-story fireproof addition to its plant at Rutherford, New Jersey. This addition, which is 129 feet long and 141 feet wide, will be equipped with all the latest machinery adapted to the manufacture of tires and tubes and will increase the capacity of the plant to approximately 1,000 tires and tubes each per day.

* * *

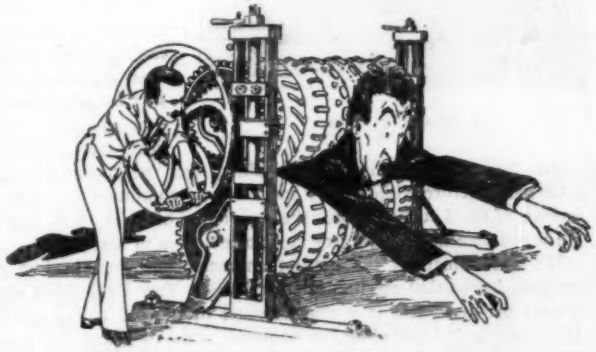
October 19 was a date of special rejoicing in the home of J. Cornell Murray, vice-president of the Empire Rubber & Tire Co., of this city, the occasion being the birth of a son.

* * *

A 2,000-ampere power station is being built in this city by the Wright Electric Co., adjoining the factories of the United & Globe Rubber Cos. and the J. H. Smith Co. Both of these concerns have found night operation of their plants necessary in the production of tires in required quantities, and the erection of this modern electric plant will enable the companies to operate night as well as day shifts besides effecting a considerable saving in power cost.

THE MICHELIN IDEA OF ROUGH TREADS.

The Michelin company has always been a staunch and persistent advocate of the smooth tread. All treads with any sort of pattern this company has always referred to as "sculptured tires," and sculpture on the tread of a tire, it asserts, is



waste, pure and simple. Here is a cartoon recently promulgated by the Michelin company showing the unhappy consumer being squeezed by the "sculptured" treads.

THE MOHAWK RETREAD BAND.

The Mohawk Rubber Co., of Akron, Ohio, is now manufacturing a non-skid retread band. This band is endless and is molded into shape, so that it fits the casing perfectly. It is semi-cured and has a layer of pure gum on the inside, where it comes in contact with the casing, which makes buffing easy and gives the cement the proper hold to prevent separation. In applying the band it is cemented, buffed, wrapped and cured. The tread design is the same as the pattern illustrated on page 316 of THE INDIA RUBBER WORLD for March, 1914.

THE OBITUARY RECORD.

HENRY P. DAY.

THE American rubber industry lost one of its pioneers and veterans in the death of Henry P. Day, which occurred at his home in Seymour, Connecticut, on October 9, in his eighty-sixth year. For nearly sixty years he had been associated with his brother in the manufacture of hard rubber pencils, penholders, fountain and stylographic pens and other specialties. He was one of the first to take up the manufacture of hard rubber and during the greater part of his long life was identified with this industry.

Mr. Day was born in West Springfield, Massachusetts, March 12, 1829, the son of Julian Day and Lois Goodyear, a cousin of Charles Goodyear. He attended the public schools of that place until the age of 14, when he went to Ohio and became associated with an uncle in the manufacture of paper.

When he reached the age of 21 he joined the great gold seeking caravan and went to California, remaining there for three years. In 1854 he returned to the East and settled down in Seymour and with his two brothers, Austin and Edmond, embarked in the rubber business, their first work being confined chiefly to the cleaning of rubber. But very soon they began the manufacture of hard rubber goods and insulated wire cables. Their business increased to such an extent that about ten years later, in 1866, it was divided, the brother Austin taking over the insulated wire cable manufacture while Henry and Edmond continued the manufacture of hard rubber, under the firm name of H. P. & E. Day. He was active in this industry up to a few days of his death.

HENRY P. DAY.

He was a man of the highest character and possessed in a marked degree that sterling integrity which New Englanders are always proud to feel is a characteristic of the old native stock. He was greatly beloved by his employes, some of whom had been associated with him for half a century. He was public spirited as a citizen and with his brother Edmond recently donated a free public library to the town of Seymour.

He was married in 1865 to Miss Fannie Gilbert, who, with two sons—Julian Gilbert Day, of Derby, Connecticut, and Henry Goodyear Day, of New Haven—survives him.

TRADE OPPORTUNITIES FROM CONSULAR REPORTS.

A firm in the East desires to be placed in communication with American manufacturers of india rubber tires for carriages. It is stated that if the firm can secure proper connection a considerable amount of business will result. Prices—which should be quoted f. o. b. shipping port, or preferably c. i. f. destination—discounts and terms should be sent, in English, when references will be furnished. Report No. 13,877.

A manufacturers' agent in the United Kingdom wishes to secure agencies for American rubber shoes. English and American references will be furnished. Report No. 13,899.

A highly reputed house in the United Kingdom wishes to secure names and addresses of American makers of zinc oxide, dry white and red leads, being prepared to buy outright c. i. f. destination or to act as buying or selling agents. Report No. 13,922.

A firm in southern Europe wishes to represent an American firm exporting rubber for automobile tires. Report No. 14,055.

A European firm handling paper of all kinds, rubber tubes, sponges and rubber mats, desires to act as agent for American manufacturers. Correspondence may be in Portuguese or French. Report No. 14,033.

A firm in the East Indies desires to place an order for American waterproof canvas. This firm will require a very large quantity of canvas, and prices, etc., and time of delivery of 10,000 yards of each quality desired should be submitted at once. Samples forwarded by the consular officer may be inspected at the Bureau of Foreign and Domestic Commerce, Washington, and at its branch offices. Report No. 14,034.

A foreign consular officer resident in the United States wishes to receive names of American manufacturers of rubber hospital supplies and surgical instruments. Report No. 14,147.

A company in the United Kingdom requires considerable quantities of compressed ebonite for high-tension insulation for magnetos for internal-combustion engines. Report No. 14,149.

An importing firm in the United Kingdom desires to purchase pigments such as white lead, zinc oxide, lithopone, etc. Report No. 14,161.

A company in England wishes to secure agencies for American manufacturers of Chemicals. Report No. 14,162.

A manufacturer and importer of elastic goods in South America desires to secure samples, quotations, etc., regarding thread rubber for weaving elastic goods; twisted and artificial silks and twisted cotton thread for weaving elastic goods; also raw glue and raw dextrine, and catalogs of machinery for this line of manufacture. Correspondence should be in Spanish. Report No. 14,183.

THE MADEIRA-MAMORÉ RAILWAY IN A RECEIVER'S HANDS.

The Madeira-Mamoré Railway whose early history and marked vicissitudes have been set forth in these columns from time to time, was placed in a receiver's hands on October 13 by the Federal Court at Portland, Maine. This was done on the complaint of Deane Mann, of London, England, who owns something over $100,000 of the company's bonds, the interest of which, according to his claim, due on the first of October, was not paid. The railway company admitted the allegations in the complaint and joined in a petition for the receivership.

The Madeira-Mamoré Railway was organized in Maine in August, 1907, and the controlling company, The Brazilian Railway Co., was organized in the same state about a year earlier. The two companies have outstanding capital of $63,000,000 and it is said that their indebtedness exceeds $118,000,000. In a general way, the cause that necessitated the receivership was the prostration of business in the Amazon country and particularly the low price of rubber which made the operation of the Madeira-Mamoré road unprofitable. The immediate cause of the company's trouble was its inability to obtain $10,000,000 said to be due the Brazilian Railway from the Brazilian Government.

Just how much rubber business this road will have in the future, is problematic, but with the general development of northern Bolivia and particularly with the opening up of its gold fields, it is by no means impossible that this little strip of railroad, hardly more than 200 miles long, which involved such a disproportionate outlay of money, not to mention the sacrifice of human lives, may some day make some adequate return for its great cost.

New Rubber Goods in the Market.

WATERPROOF SPORT AND HUNTING CLOTHES.

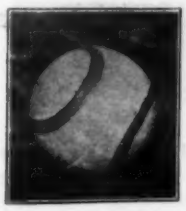
THE white rubber raincoat illustrated is made with fan fullness in the back, so that it may be worn in the saddle, for which purpose it is intended, as well as for use of the motorist.

The second illustration shows a hunting suit. This suit, which is made of waterproof Forestry cloth, consists of coat, knickerbockers and a convertible garment which may be used either as a skirt or cape. A hat of the same material completes this very practical outfit.

Sport coats of various other designs are being made in such light weight materials as rubberized cashmere and rubberized crêpe-de-chine, and of rubberized Mercerized Cantonia.

HOLLOW RUBBER BALLS OF NEW DESIGN.

The rubber ball is no particular novelty. In fact, all the writers on rubber history mention the interesting incident where the Europeans who followed immediately in the wake of Columbus discovered the South American Indians playing with rubber balls. But here are rubber balls of new design. They are all hollow. The first ball,

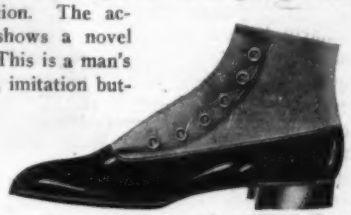


which is 3½ inches in diameter, may properly be called an alphabet ball, as it has a raised band around the center on which appear all the letters from "A" to "Z." These letters are embossed and colored so as to make them quite conspicuous, the idea evidently being that while the youngster is deriving amusement from playing with the ball he is quite unconsciously absorbing his letters. The raised letter idea is also carried out in the other 3½-inch ball, on which are molded the words "Merry Christmas."

The smallest of the three balls, which is 2½ inches in diameter, is in its design an imitation of the ordinary baseball so dear to the heart of every American boy.

IMITATION BUTTON SHOE WITH ALL GORE TOP.

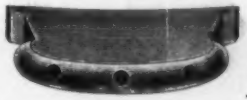
The substitution of cloth and other materials for leather in shoe tops is a distinctive feature of this season's sample lines, inspection of which shows several styles in which goring forms the material of substitution. The accompanying illustration shows a novel example of this feature. This is a man's shoe with an all gore top, imitation button, designed to slip on over the foot in regular boot style. In appearance it looks exactly like a cloth top shoe, while having the advantage of a much better fit. [Hub Gore Makers, Boston.]



RUBBER REQUISITES IN THE GENTLE GAME OF FOOTBALL.

Rather strenuous sport is the American game of football. At the close of each season the statisticians compile the number of casualties that have occurred on the different college campuses. These figures are usually rather startling, and they would be much more so if it were not for the various rubber protectors that have been devised to save the players from further maiming. Here are illustrations of two of these protecting devices. One of the accompanying cuts shows the Morrill Nose Mask. This protector is made of the finest quality of rubber, fits over the nose snugly, but leaves a place for ventilation, and is fastened around the head. It saves many a player from going through life with more lumps on his nose than nature originally provided.

The other cut shows a mouthpiece for the football player. This also is made of rubber and has three ventilating holes. It enables the player to come out of a game with all of his teeth, a condition that would hardly be possible without this rubber protector.



A BOXER THAT ALWAYS "COMES BACK."

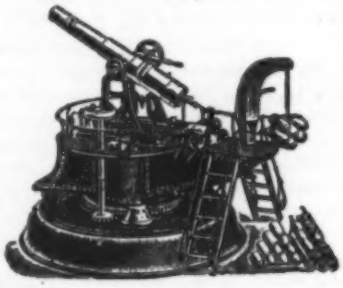
The illustration shows a boxer that all other boxers must look upon with great envy, for he always comes back—and not only that, but comes back immediately. He may be knocked down repeatedly but he never takes the count. This boxer is known as "Spalding's Fighting Dummy," and from the waist line up he consists of an interior rubber bladder, highly inflated, held in place by a hidden steel frame and covered with heavy brown canvas. The feet are fastened in a heavy bowl-shaped iron base, which causes the figure to maintain an upright position and to resume it at once on being knocked over. The great advantage of this device is that it enables anybody to do solo boxing, a great convenience on getting up in the morning or going to bed at night, when a human boxing mate may not be available. [A. G. Spalding & Bros., New York.]

ONE WAY TO PRESERVE RUBBER ARTICLES.

A correspondent writes to the "Pharmazeutische Post" in regard to a method he has discovered for preserving rubber articles. He gives the articles a thin coating of glycerine and then puts them in a tight receptacle in the bottom of which there is kerosene. The rubber articles are put on a rack above the kerosene and are exposed to its vapor. This process, in his experience, gives the rubber a surface which preserves it.

A TOY COAST GUN WITH RUBBER PROJECTILES.

Probably Secretary Bryan would not approve of the toy that is herewith illustrated, for it is a military mechanism of most dangerous aspect. But toy guns have, unfortunately, always seemed to appeal to the masculine young, and are likely to retain a prominent place, particularly in war times, among the articles produced for youthful diversion. This gun, however, is not as formidable as it appears, for the projectiles used are made of rubber and can be hurled promiscuously around the room with perfect safety.



A RUBBERIZED CARTRIDGE BAG.

It is eminently desirable—as already remarked by divers people—that one's powder should be kept dry. Here is a cartridge bag expressly for such a purpose. It is made of waterproof sateen and so contrived that the cartridges once in it cannot be affected either by rain or damp. The bag has a double top, the inner one being soft and pliable and susceptible of being pulled together with a gathering string and tied very tightly. Over this there is a flap that is held down by a buckle on the side of the bag. With this double protection the cartridges are immune from any dampness. The bag is equipped with straps for convenience in carrying. [J. P. Cording & Co., London.]

A MOTORCYCLIST'S RAIN SUIT.

Here is a Scotch idea of a motorcyclist fully protected against the fiercest storm. This suit is made of strong khaki or dark fawn twill of double texture, with rubber proofing. The jacket, which is double-breasted, is long, coming well toward the knees. It has a storm collar and adjustable elastic cuffs. A pair of trousers or overalls of the same material completes the outfit and gives the motorist ample protection under all conditions. [The Scottish India Rubber Co., Ltd., Glasgow.]

A WATERPROOF GOLF CLUB BAG.

Golf clubs may not be seriously damaged by an occasional wetting, but they are certainly not improved by it. The owner of a choice set of clubs naturally prefers to keep them dry. An Edinburgh company has put on the market a golf club carrier which is made of waterproof material, an illustration of which is here given. It will be noticed that the carrier is equipped with a hold fast handle. [William Currie & Co., Edinburgh.]

RUBBER SOLE WITH LEATHER TOE PATCH.

The old order has been reversed, and in place of the leather sole with rubber patches or plugs we now have the rubber sole with a leather patch. This new rubber sole extends the entire length of the shoe. The leather patch, which begins at the toe and extends back about 2 inches, running either straight across the sole or on an oblique line, is flush in thickness with the rest of the sole, the rubber under the leather patch being made considerably thinner than the rest of the sole. The rubber and the leather are joined together on a beveled line. [Flexible Rubber Goods Co., Salisbury, Connecticut.]

RUBBER IN ATHLETIC ACCESSORIES.

One of the newest athletic accessories is a union suit, as shown in the accompanying illustration, the jacket and pants portions of which are joined at the waist by a wide elastic webbing belt. This suit is made of tan army khaki and has the usual knee and hip pads and thigh guards.

A new outdoor basket ball is also now being marketed, the wearing qualities of which are claimed to be superior to any other style yet produced. The new feature of this ball is that the sections of the leather casing are turned outward, making out-seams. The wear on a basket ball being chiefly on the seams—contact with rough surfaces such as cement, cinders, etc., quickly wearing the thread through and causing the seams to rip—an outseam is supposed, by preventing such wear, to indefinitely prolong the life of the ball. An inflatable pure gum bladder is supplied with each leather casing, and the ball is laced with a rawhide strip. This new ball has been adopted by many of the playground and outdoor associations throughout the country. [The Draper-Maynard Co., Plymouth, New Hampshire.]

A RUBBER HOCKEY PUCK.

The Spalding "Official" hockey puck here illustrated has been adopted as the official puck of the Canadian Amateur Hockey League, for use in all match games. It is made of rubber, thus eliminating in a measure the possibility of accidents or injury to the players. [A. G. Spalding & Bros., New York.]

KNEE AND ELBOW PADS.

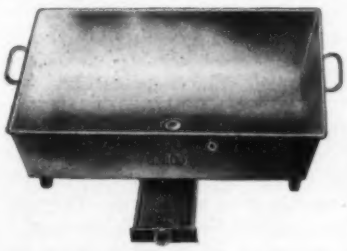
Knee and elbow pads for use in athletic sports are now being made with attached elastic bandages. This is an improvement over the old style for, while the pads afford protection against knocks and hard bumps, the bandages provide support for the knee and elbow and hold the pads in place. The knee pad illustrated is made with leather cover, in roll style, while the elbow pad is made of felt strips—both with elastic bandages at either end.

AIR PUMP CONNECTION RUBBER.

The Romort air pump connections, for use on hand and foot pumps, spark plug and auto tire pumps, will not blow off the tire valve nor turn inside out. They are used in public air stations, garages and vulcanizers wherever air is used. It is all due to the novel design of the little rubber gasket illustrated above. This is the principal feature of the Straight Pump Connection, Automatic Air Valve and the Angle Pump Connection made by the Romort Valve Co., Seattle, Washington.

PROTECTING THE SINK FROM THE DISH PAN.

An enterprising manufacturer of tinware has just introduced to the trade a new form of dish pan which should make a strong appeal to the practical housekeeper. This pan is rectangular in shape and so will fit down into the sink. Also, it will be noticed that an outlet is provided in the bottom of the pan—stopped by a rubber plug similar to those used in bath tubs—while a small strainer drawer of rustless galvanized mesh catches any grease or refuse in the water. This drawer slides out and can easily be cleaned. Another feature of the pan is the rubber plugs inserted at the corners to raise it from the bottom of the sink and to prevent scratching of the porcelain. [Ammidon & Co., Baltimore.]



A HOT-AIR COMB TO DRY THE HAIR.

Drying the hair deprives a great many women, particularly those addicted to seaside resorts, of many hours of time which might otherwise be turned to some useful purpose. All this tedious drudgery can now be avoided by the use of a simple device, provided there is an electric light attachment conveniently at hand. This device consists of a comb in the back of which there is an electrical heating unit. The teeth are hollow, while at one end of the comb there is a soft rubber bulb, as shown by an outline in the accompanying drawing. When the comb is to be used it is attached to the electric light fixture and the compression of the bulb sends the air over the heated electrical coil down through the teeth of the comb into the hair. This continual supply of heated air naturally greatly expedites the drying process.

PNEUMATIC STAGE SCENERY.

Stage scenery which, while being more than ordinarily realistic in appearance, is more easily portable than the old time styles, has been produced, in the form of objects made of air-tight fabric. This scenery may be quickly inflated and when collapsed it occupies very little storage space or may be shipped from one point to another with slight trouble and expense. Trees reproduced in this manner are said to be wonderfully effective, even from a short distance.

FLESH-REDUCING RUBBER GARMENTS.

On page 322 of the March, 1913, number of THE INDIA RUBBER WORLD, mention was made of Medicated Rubber Garments designed and patented by Dr. Jeanne Walter, of New York, for reducing flesh. To her line of union suits, stockings, jackets, wrinkle eradicators and other rubber garments for men and women, Dr. Walter has recently added a bust reducer, made from her reducing rubber, with coutil back.

THE SILENT TIP

This small cut shows a new furniture tip of which rubber is an essential component. This tip consists of three parts—a small crimp or casing, a rubber bumper or cushion and an ordinary screw. The rubber is vulcanized in the metal part with the screw in place, and acts as a silencer, while the smooth surface of the metal glides over the floor without leaving a trail of scratches. [The Silent Tip Specialty Co., 317 Sweetbriar street, Pittsburgh.]

THE "PARAGON" CHANGING BAG.

A new style of bag for changing plates or remedying defects in hand camera photography has lately been placed on the market This bag is confidently recommended by its manufacturers as "a thoroughly well made, practical and durable article." It is made of three thicknesses of proofed woven fabric. As will be seen by the illustration, the sleeves are conveniently located to give perfect freedom to the arms. The eye-piece is fitted with ruby glasses through which the interior of the bag may be seen, while a window of unbreakable material affords safe and sufficient light. [Houghtons Ltd., 88 High Holborn, London, W. C.]

PNEUMATIC TIRE WITH A CABLE TREAD.

A tire of unusual construction, known as the Cable Pneumatic, is shown in the accompanying illustration. The tread is made with a thickened portion extending inwardly and having a number of flexible steel cables inlaid in it during its manufacture. These are said not to detract from the resiliency, but to strengthen the tread. They are so placed as to make the tire puncture proof, since they stop any sharp instrument piercing the outer cover. When the inner tube is inflated it has two high shoulders which provide a cushion effect. [C. T. Brown, 258 Broadway, New York City.]

CROSS SECTION OF THE CABLE TIRE.

WIND-SHIELD WEATHERSTRIPS.

To eliminate the possibility of rain coming through the space between the upper and lower halves of automobile windshields, and consequent annoyance, a weatherstrip has been invented, adjustable to all shields regardless of thickness of glass or space between the sections. The strip, which is of rubber and less than an inch in width, is made with a flange on one edge which fits over the lower section of glass and forms a perfectly watertight connection. It is easily adjusted and, although not wide enough to obstruct the vision at any time, may, if desired, be carried under the seat of the car in fine weather.

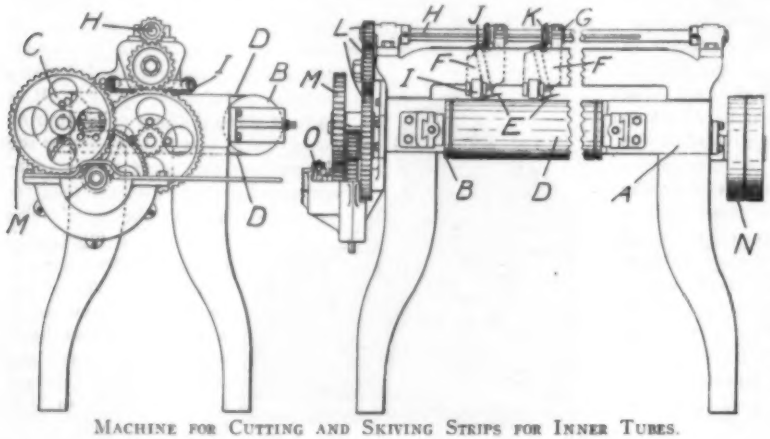
Replete with information for rubber manufacturers—Mr. Pearson's "Crude Rubber and Compounding Ingredients."

New Machines and Appliances.

MACHINE FOR SKIVING INNER TUBE STRIPS.

WHERE the edges of rubber strips for inner tubes are skived by hand great skill is required in order to make the bevel uniform and give it the proper angle to form the best joint. A new machine for doing this work, automatically cutting and beveling several strips at one operation, is illustrated herewith.

The drawings show end and front elevations of the machine,



MACHINE FOR CUTTING AND SKIVING STRIPS FOR INNER TUBES.

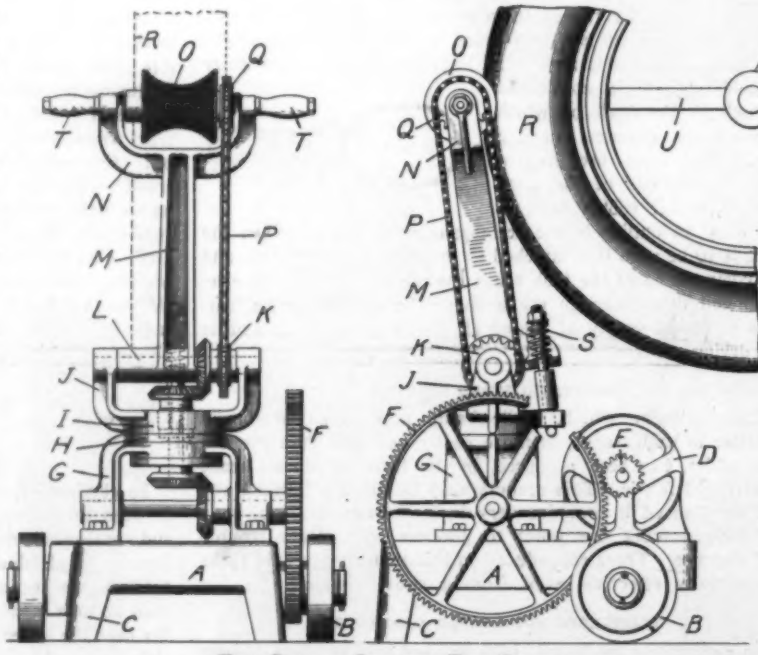
in which is a table *A* having a roller *B* at the front and another roller *C* at the rear, over which passes an endless belt *D* for supporting and conveying the strip of rubber under the rotating, circular cutters *E*. Each of these cutters is mounted on the lower end of a spindle in the carriage *F*, the upper end of which forms a bearing for a sleeve *G* on the splined shaft *H*.

The lower end of each carriage has a curved presser foot *I* set close to the edge of the cutter. These sleeves and carriages may be moved along the shaft and set to cut strips of any width. The cutter spindles carry bevel gears *J*, which are rotated by bevel gears *K* on the sleeves *G*. The shaft *H* is rotated by gears *L*, and the endless belt *D* is operated by a gear *M* on the shaft of the rear roller *C*. The machine is driven from the belt pulley *N* and is controlled by a clutch *O*.

The sheet of rubber is fed over the belt *D* and is held down on it by the pressure feet *I*. The cutters *E* rotate at high speed and cut the sheet into strips of the proper width and with a bevel of uniform angle. While only two cutters are shown, others may be added, according to the width of the belt *D* and the number of strips to be cut. [U. S. Patent 1,111,170, Sept. 22, 1914. E. Nall and W. C. Tyler, assignors to the Goodyear Tire & Rubber Co., Akron, Ohio.]

PORTABLE BUFFER FOR TIRES.

IN making tires with a fabric breaker strip between he layers of rubber in the tread, the under layer is usually roughened by hand with a coarse rasp to provide a better adhering surface. The accompanying drawings show two views of a portable buffer designed to do this work more quickly and effectively. The machine is mounted on a truck *A* supported at one end by wheels *B* and at the other by legs *C*. On the truck is a motor *D* whose shaft carries a pinion *E* driving a gear *F*. The shaft of this gear is journaled in a pedestal *G* having a swivel plate *H* at its upper end. Above this is a similar plate *I* with a yoke *J*, forming bearings for a shaft which carries a sprocket *K*. This is driven through a set of miter gears from the spur gear *F*. A collar *L* on the shaft carries an arm *M* having a yoke *N* at the top. In this yoke is journaled a concave buffing roller *O* driven by a chain *P* passing over sprockets *Q* and *K*. The buffer is held against the tire *R* by a spring *S*. The yoke *N* has two handles *T* by which the arm *M* may be turned on its swivel to move the buffer from side to side over the tire, while the latter, mounted on the spider *U*, is revolving. The handles may also be used to increase the pressure of the buffer against the tire. [U. S. Patent 1,112,865, Oct. 6, 1914. W. C. Stevens, assignor to the Firestone Tire & Rubber Co., Akron, Ohio.]



THE STEVENS PORTABLE TIRE BUFFER.

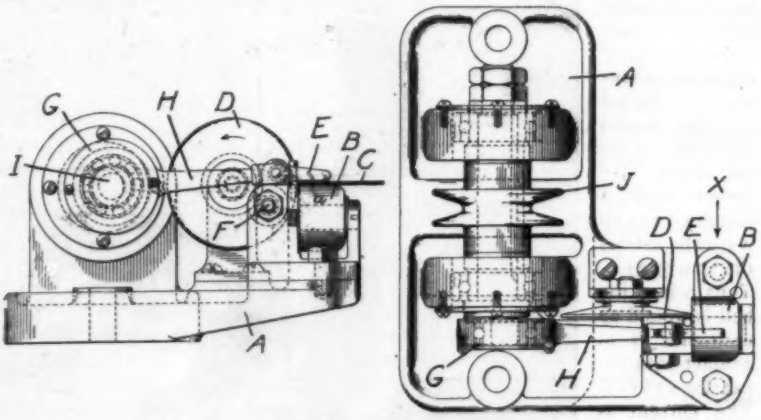
Werner & Pfleiderer Co., the well known makers of machinery for the rubber trade, are increasing their manufacturing facilities by the addition of an up-to-date foundry extension at their factory at Saginaw, Michigan.

The Williams Foundry & Machine Co., of Akron, has recently received instructions from the Ford Motor Co., of Detroit, to duplicate the order previously given for fourteen Williams vulcanizing plants for as many of the Ford distributing agencies.

MACHINE FOR FOLDING EDGES OF SHEETS.

THE illustrations herewith show an end elevation and a plan of a machine for folding back the narrow strips of rubber which sometimes project beyond the edges of coated fabrics. This work has heretofore been done by hand and as the rubber is unvulcanized and of sticky character, the problem has presented some difficulties.

The machine has a bed plate *A* carrying at the front a roller *B*, over which the coated fabric *C* is moved by hand. As the fabric moves along in the direction of the arrow *X* in the plan view,



MACHINE FOR FOLDING EDGE OF RUBBER SHEETS.

the projecting edge of rubber is thrown up and back by the rapidly revolving belt driven disc *D* having a smooth edge. The folded strip of rubber then passes under a hammer *E*, which is pivoted at *F* and operated by an eccentric *G* through a connecting rod *H*, the eccentric being mounted on a ball bearing on a shaft *I* rotated by a belt pulley *J*. The hammer delivers light but rapid blows and presses the rubber strip down firmly and smoothly on the fabric. [U. S. Pat. 1,111,232, September 22, 1914. J. E. Perrault, assignor to Hood Rubber Co., Watertown, Massachusetts.]

OTHER MACHINES OF THE MONTH.

IN addition to the machinery described in some detail and illustrated above, several other appliances for use in the manufacture of rubber goods have appeared during the past month, descriptions of which, without illustration, follow.

FEEDING FABRICS TO SPREADERS.

This is a device for quickly and smoothly attaching the leader strip or apron to the fabric, eliminating the loss of time required where the ends of the two pieces are sewed together, and doing away with the wrinkles caused by the stitches. The device is a narrow metal plate as long as the width of the apron, with its front and rear edges bent over to form hooks. The rear end of the apron and the front end of the fabric are each wrapped around a narrow clamping strip, and these are slipped under the hooks on the plate. The spreading knife is then raised to allow the plate to pass under and the spreading is begun directly at the end of the fabric, so that there is no waste. [U. S. Pat. 1,110,633, September 15, 1914. C. J. Landin, assignor to Clifton Manufacturing Co., Boston, Massachusetts.]

SHOE SOLE VULCANIZER.

This is a vulcanizer for applying rubber soles to leather shoes. Unlike the ordinary dug-out or sunken mold, it consists of a base plate, engraved to form the bottom of the sole, with adjustable and detachable walls for forming the edges. These side walls are moved in or out by set screws, so that several widths of sole may be formed for each length of shoe. By detaching the walls, others may be substituted to vulcanize soles of different thicknesses. [U. S. Pat. 1,111,436, September 22, 1914. George F. Butterfield, Cambridge, Massachusetts.]

WIRE SPIRALS FOR TIRE TREADS.

An apparatus has been devised for winding wire spirals and filling them with rubber compound for incorporation in the treads of tire casings. As the spiral is wound it is run through a tube into which the compound is forced by a feed screw. This forms a composite rubber-wire cylinder, which is cut into proper lengths and laid in the tread as the latter is built up. In the completed tire there are four of these wire spirals running longitudinally around the tread just under the surface of the rubber. [U. S. Pat. 1,111,418, September 22, 1914. F. L. O. Wadsworth, Sewickley, Pennsylvania.]

CLICKING MACHINE FOR CUTTING UPPERS.

Ordinarily, clicking presses for cutting out shoe uppers cannot be made to operate over wide stock without having the machine too large and cumbersome or making the cutting block movable. To obviate these difficulties an attachment has been designed by which, after the whole area of the cutting block has been cut over, the stock is shifted to the opposite end of a pair of supporting rails, bringing the uncut stock within the range of the cutter. [U. S. Pat. 1,113,326, September 29, 1914. C. H. Roper, assignor to Hood Rubber Co., Watertown, Massachusetts.]

BRAIDING MACHINE FOR TIRES.

A machine has been patented for braiding tire carcasses in annular form, in which a braiding mechanism of ordinary construction revolves horizontally around the tire core, the latter being revolved vertically between guide rollers. When a layer of the fabric is braided entirely around the core, it is covered with a thin layer of rubber compound and a second layer of fabric is braided into it. This is repeated until the carcass is of the desired thickness, when it is slit along the inner diameter and the edges bound to prevent unraveling or turned back to form the bead. This serves as the body of the tire upon which the tread may be built in the usual way. [British Pat. 7,226 (1914). W. H. Dunkerley and T. J. Arnold, Paterson, New Jersey.]

APPARATUS FOR MAKING BULBS.

This comprises two separate devices, the first for forming the bulb with one end closed and the other open in cylindrical form; the second device is for closing and finishing the bulb. The first of these has four hydraulic cylinders; two for closing the mold, one for operating the mandrel, and one for forcing the compound into the mold. After removal from the mold, the open end of the bulb is closed by placing it over another mandrel of elliptical shape, and expanding a strong rubber ring over it. As the mandrel is slowly withdrawn by a feed screw, the rubber ring contracts around the open end of the bulb and closes it. The surplus rubber is cut from the end of the bulb, which is then vulcanized. [British Pat. 7,299 (1914). Rudolf Daeschner, Pasing, near München, Germany.]

VULCANIZING RUBBER BY ELECTRICITY.

RAYMOND B. PRICE, whose name is well known in the reclaiming industry, has been granted U. S. Pat. No. 1,081,330 for a process of vulcanizing rubber in which electricity is used for developing the necessary heat, the process being specially adapted for vulcanizing such articles as belting.

ELECTRICAL VULCANIZER.

The illustration shows the method used. This is a circular vulcanizer with a square bar in the center acting as a mandrel. Around this is wound the belt to be vulcanized together with a metallic strip which carries the current. Thus when the belt is wound up each side is in contact with the heating strip. The current is turned on through the metallic strip and it is gradually heated by the resistance.

In one experiment described an electrical current of 639 amperes and 1.13 volts was passed through the metal strip for a period of 32 minutes. At the end of that time the strip was uncoiled and the belt was found to be perfectly vulcanized. The temperature rose during the vulcanization to 300 degrees F., the belt being covered with asbestos so as to give a heat insulation. The material vulcanized was a sheet of rubber packing of cheap stock, seven inches wide and 1/16 inch thick.

The claims are for the apparatus comprising the mandrel and strip of metal adapted to be coiled around the mandrel with rubber intermediate between the coils, electrical connections and a casing to retain heat.

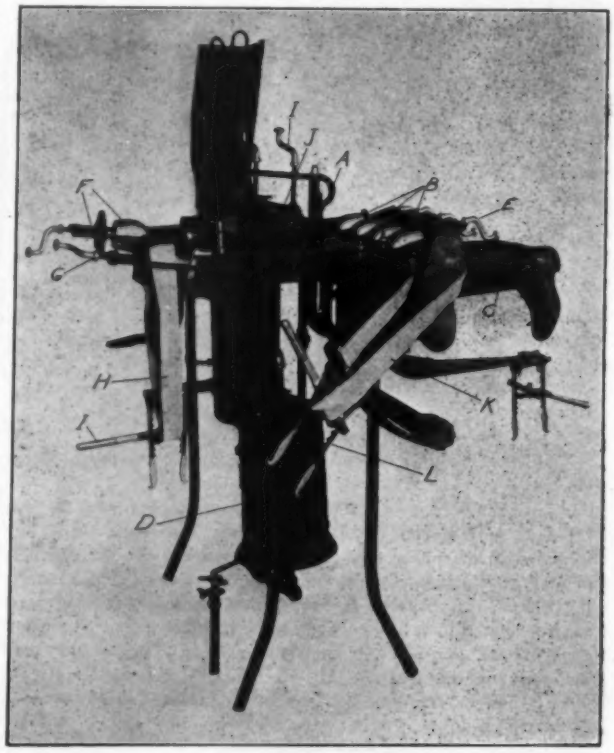
It appears also that Mr. Price has been devoting some attention to the vulcanization of such articles as boots and shoes which are usually cured in ovens. British patent No. 10,695 of August 26, 1914, has been granted to him for a process of vulcanizing in which the article to be vulcanized—for example a boot—is placed over a perforated last or tree which in turn is connected with an air pump or some other arrangement for producing a vacuum.

In the cut the boot is shown on the hollow and perforated last, and sealed by the wire 17 at the top. The vacuum pipe 12 serves to remove the air from the last, thus pressing the boot close to it. The effect may be heightened by putting on a pressure of air or steam through the pipes 6 and 7.

The special idea is to remove any air which may be entrapped between the fabric and rubber layers before vulcanization.

A FOOTWEAR REPAIR VULCANIZER.

THIS novel machine is constructed on the principles of the well-known tire repair vulcanizers, and is used for rubber boots and shoes. It has four tubular legs which support the steam table *A*, the six shoe mandrels *B* and the two boot mandrels *C*. These parts are all chambered for steam which is generated by the gas-heated boiler *D*. The screw clamps *E* hold the shoes in place while being re-heeled. If a patch is to be applied, the shoe



is placed on one of the mandrels, *F*, where it is held by the heel clamp, *G*. The patch is held in place by the presser band *H* and the stretcher lever *I*. Boots and shoes are re-soled by the sole plate *J* and the holding clamps *I*. Boots are repaired on the mandrels *C* and the patch is held in place by the presser band *K*, which is tightened by a lever *L*. The machine has a steam gage, water glass and safety valve. The preparation of the repair and the subsequent vulcanization is very similar to that of the tire shoe repair. [Smith & Arthur, Ashtabula, Ohio.]

FEDERATED MALAY STATES EXPORT DUTY ON RUBBER.

It is reported that the government of the Federated Malay States proposes to arrange the export duty on rubber in such a way that when the London price falls below 1*s.* 6*d.* per pound, no duty will be charged. When the price attains 2*s.* the present rate of 2½ per cent. would be levied.

ONE FOR THE POET.

The poet sat in the front seat as the car sped over the highway at a forty-mile clip. His hair streamed behind him as though striving to reach his hat, long since flown, but he was happy, and his soul surged with poetry.

"Where are the Ships of Tyre?" he quoted, ecstatically.

There came a sudden report from the off hind wheel.

"Punctured, b'gosh!" replied the chauffeur.—*Harper's Weekly.*

Trans-Atlantic Notes.

[The Rubber Industry's Remarkable Immunity from War Influences.]

WHEN the war broke out the rubber plantation industry of the Middle East was faced with a very difficult situation. Shipping and finance were the chief problems. It was impossible for a time to remit funds for the upkeep of estates, whilst the raising of freights and insurance risks emphasized the trouble. These difficulties were, however, soon overcome. In the Malay States the Government promptly broached a scheme for financing estates temporarily embarrassed, offering to advance 30 cents (Straits currency, equal to 16.8 cents in United States currency; 100 cents = 2*s.* 4*d.*) per pound against rubber crops and, in the case of estates not yet producing, to furnish loans on the security of title deeds. As regards shipping facilities, too, insurance rates quickly fell away as soon as practical British control of the trade route became apparent, so that in a comparatively short time practically normal conditions were resumed in the plantation industry. Supplies have been coming forward much as before, and the price of the product has continued to maintain a steady level. A number of British merchantmen have been sunk by the Germans in Eastern waters, but although something like seven million pounds of tea have gone to the bottom, no ships containing rubber in that region have yet been attacked. In the North Sea, however, one steamer conveying something like two hundred tons of rubber to Russia was mined and sunk, but that is the sum total of the commodity lost up to the middle of October. Considering Russia's pre-occupation with war that country maintained its import of rubber during September far better than other Continental countries. But all shipments have to be sent via Archangel, and as this port will shortly be closed by the ice, Russia will presumably be unable to obtain further supplies for some considerable time.

STATISTICAL POSITION IN RUBBER.

In view of the chaotic state of affairs now ruling in commercial and industrial circles, the Board of Trade figures, showing the movement of rubber to and from the United Kingdom during the month of September, are of exceptional interest. They indicate that the rubber industry has suffered far less than most through the outbreak of war. As Germany is now entirely cut off, the exports for the month naturally show a shrinkage, but, as the United States took more than usual, the total reduction is less than might have been expected. Following are the comparative exports from England for the month of September and for the nine months:

	Month ended September 30,		
	1912.	1913.	1914.
To Russia....centals of 100 lbs.	5,430	5,738	3,329
To Germany	16,028	14,078	.....
To France	18,978	7,857	1,053
To United States	25,991	35,375	51,303
Other countries	9,147	9,845	6,280
Totals	75,574	72,893	61,965

	Nine months ended Sept. 30,		
	1912.	1913.	1914.
To Russia....centals of 100 lbs.	56,383	106,644	96,309
To Germany	143,849	171,579	158,428
To France	88,214	79,325	98,304
To United States	237,881	286,670	386,576
Other countries	68,649	93,698	96,087
Totals	594,976	737,916	835,704

A heavy decline is shown in the quantity taken by France, and the export to other countries has fallen by one-third. As Belgium and Austria, both at war, are included under this head, the falling off might well have been greater.

Although the imports of rubber into the United Kingdom during September do not show anything sensational, a very pronounced shrinkage of all wild rubbers is to be noted. Whether this is entirely due to decreased production in the centers of supply is open to question, but in Africa, if not in South America, it is certain that production has been greatly curtailed. Following are the comparative import figures for September, also in centals of one hundred pounds:

	Month ended September 30,		
	1912.	1913.	1914.
From French West Africa.....	1,699	1,047	108
From Peru	3,203	2,555	277
From Brazil	22,747	14,444	11,484
From Gold Coast	606	427	169
From Straits Settlements	20,217	35,360	37,304
From Federated Malay States..	13,051	22,719	15,734
From Ceylon	9,025	15,619	24,877
From other countries	25,359	38,832	22,360
Totals	95,907	131,003	112,313

RUBBER DECLARED CONTRABAND.

At the beginning of September it became evident in London that Germany was endeavoring to obtain fresh supplies of rubber from England through Holland. Telegraphic orders were received from Amsterdam, but signed by well-known German manufacturers. At that time there was nothing to prevent the despatch of rubber to Holland, but rather than supply the enemy and contrary to their own interests, importers laid the facts before the Government, with the result that rubber was promptly declared conditional contraband. What effect this will have upon statistics remains to be seen. For the time being the consumption of rubber must depend mainly upon the demand in this country and in the United States and Canada.

THE TRADE WAR.

As your readers are doubtless aware, war to the knife is being waged in England against German trade. The Press is not merely hunting up German firms established here, but is searching the lists of shareholders of all companies filed at Somerset House to find the extent to which German capital is employed in various undertakings in England. The campaign is a very bitter one, the significance of which may not be fully appreciated in a neutral country. But it is realized here that such economic pressure as we may bring to bear upon Germany will possibly be a more potent factor in terminating the war than the military operations of the Allies in the field.

As a result of the war on German trade many Teutonic firms have been unostentatiously changing their names. It is said that as many as five hundred such changes have been made since August 1. This loophole has, however, just been effectually closed by an order in council, forbidding an alien enemy to trade under any name other than that used when the war commenced. As the order is made retrospective, the position of the five hundred is scarcely an enviable one.

The Dunlop Rubber Co., Ltd., of Birmingham, has been appointed by Royal Warrant manufacturer of motor car tires to His Majesty, The King of Spain.

The India Rubber Trade in Great Britain.

By Our Regular Correspondent.

GENERAL SITUATION—ARMY AND NAVY REQUIREMENTS.

THIS has changed but slightly since I posted my last correspondence. Among additions to goods classified under conditional contraband of war is raw rubber, which, as before intimated, has been going to the enemy through the neutral country of Holland. Many of the rubber works are still exceedingly busy on army and navy orders and as early delivery is important small works which do not in normal times share in this business have come in for a share. Hundreds of thousands of ground sheets have been called for and these have been made both by the regular contractors to the War Office and also, more or less on "spec," by others who have sold them to agents. With regard to the regular contracts the inspection of the goods by the authorities is reported to be as close as ever, but so great has been the demand in connection with the new volunteer army that the ground sheets made by non-contractors, and not necessarily of the standard pattern, have found a ready sale.

The official ground sheet, I may say, has undergone some change in recent years. Formerly it consisted of a grey wigan double texture; that is the rubber was not visible. The modern form, however, is of khaki colored cloth, costing somewhere about 10 pence per square yard, and is double texture single face; that is one side is rubber surface. Every sheet, which is of rectangular form, has 36 holes near the edges. These holes are more numerous than formerly and seem to be largely in excess of requirements, as when in use very few holes are used. Their purpose, of course, is to afford facilities for lacing the sheets to the tent pegs, though it may be added that in many cases no lacing is used at all, the sheet being merely laid upon the ground to afford a waterproof base for the bed. A good deal of this khaki cloth is given out to the rubber works in the roll to be proofed. It is then made up in outside factories into knapsacks and various other articles of the soldier's kit. The cloth used for this purpose is often of a lower quality and sold at a correspondingly lower price than that for ground sheets, which, as I have already said, is 10 pence per yard for the ordinary quality, though business has been done lately at 9 pence. As there are only three firms who carry on the dyeing of khaki cloth it need hardly be said that they are working overtime.

The depression in the proofing and garment branch which has been so pronounced is now much lessened owing to large orders for mackintoshes from the War Office, both single and double textures being called for. This is an important matter for many works, especially in the Manchester district.

Leaving the army for the navy, the mechanical rubber works have a good deal on hand in connection with admiralty orders, normal requirements being largely exceeded owing to pressure of work in government and private dockyards. The most important article as regards bulk is the compound vulcanized sheet rubber, made in three qualities from specified amounts of rubber, zinc oxide and sulphur. Owing to the close competition the margin of profit on this work is by no means excessive and there is the ever-present risk of rejection should the strict letter of the specification not have been complied with. For these reasons one or two of our largest firms have held aloof from such contracts in the past. Among other goods may be mentioned gun tubes, which are 15 inches to 18 inches long, with a two-inch hole, also shaped washers with lugs for guns and plain washers perforated for both holes. Of these there are about a dozen varieties which have to be made exactly to the templates supplied. I note, according to THE INDIA RUBBER WORLD of May 1, that some revisions have been made in the United States Navy specifications owing to representations made by manufacturers, but that the chemical tests still remain. No alterations have been made in England for many years and the chemical tests still hold good, though as no definite procedure in regard thereto has been agreed upon by buyer and seller, disagreements in results are not unknown.

RUBBER GOODS FROM THE CONTINENT.

The dislocation of the shipping trade during the initial stages of the war has largely been rectified and goods, such as Michelin tires, are again easily procurable. Russian imports, however, are still obtainable only with difficulty, while trading with the enemy is, of course, quite at a standstill. Many rubber goods appear in the category of luxuries rather than necessities, and if they become unobtainable no suffering need arise. Such an article which comes to mind is the rubber sponge, which has achieved a considerable degree of popularity in Great Britain and is one of the very few rubber goods for which we are dependent upon foreign countries. The Russian-American Rubber Co., of Petrograd, was the original maker and doubtless is still the largest producer of the best article. Despite numerous attempts to solve the mystery of manufacture, no British rubber firm has yet succeeded in making a colorable imitation of the Russian sponge, the main difficulty being the particular volatile constituent which causes the intumescence, ammonium carbonate not being satisfactory for the purpose. Others, however, have been more successful than ourselves, and sponges are now being made by one works in America and by the Hannover Gummi Kamm Co. and by another concern in Germany.

During the last decade the few British firms specializing in surgical rubber goods have had to meet a good deal of competition from abroad. Complaints as to quality have been by no means uncommon, but the purchasers have had the remedy in their own hands by buying the higher priced British goods. At the moment, of course, they are compelled to do this. As regards vulcanite, which has always come largely from the Continent, considerable progress has been made of late years in the home production of many classes of vulcanite goods, and naturally the present state of affairs has given a great fillip to this branch. It remains, however, to be seen whether the present advantage will be fully retained in the future, as the conditions for polishing goods in the workmen's homes do not obtain here as in Germany.

THE RUBBER CHEMICAL MARKET.

I have read with interest the paragraph in the September issue of THE INDIA RUBBER WORLD dealing with the rubber chemical position in America. With regard to oxide of zinc, I note that America imports a good deal from Belgium. In some recent correspondence I referred to the probability of American zinc oxide coming to England. I find, however, that this has already been the case for some years, owing to an advantage in price. It is a fact that the American product is not considered quite equal to the Belgian—more commonly known in the trade as French—and it is not used for the very best work. The defect appears to be a trace of lead, which leaves black spots after vulcanization. The Belgian zinc oxide is prepared by burning the metallic zinc and is quite free from lead compounds. Presumably the position is the same in America, the Belgian oxide being imported for the best work. Whiting and chalk, in the article under notice, appear to be somewhat mixed. If the chalk referred to is produced in England it must be whiting, which is put under a separate heading. In the British rubber trade chalk always means "French chalk," silicate of magnesia, which comes mostly from Italy, while the real chalk, carbonate

of lime, is always referred to as whiting. One of the largest exporters of the latter, by the way, though a British firm, has its works situated on the French coast. It is stated that most of the magnesia used in the United States is imported from the neighborhood of the Balkans. The actual locale is the island of Euboea in Greece, but what is exported from there is the hard magnesite rock, which has to be converted into the light powdery hydrated carbonate of magnesia before it can be used in rubber manufacture. Presumably this is done in American chemical works. In British manufacture, although the Grecian magnesite is used to some extent, the more common raw material is the dolomite limestone, which occurs in bulk in certain districts and is a double carbonate of lime and magnesia.

Referring to Britain, there is a brisk demand for rubber chemicals, while prices generally are now much what they were before the war, the shortage of sulphur which was acute for a time having now been rectified.

PAVEA RUBBER.

What news there is about this so-called synthetic rubber is entirely of a negative character, and it certainly looks as if the bubble had burst. It is hinted in more than one quarter that people prominently connected with the project are not altogether surprised at the condition of affairs, but I feel certain that there are others who supported the project financially who are now much upset at the turn of events. As nothing is now being done at the large building rented at Handforth, it was proposed to utilize it as a barracks for a battalion of the newly formed Manchester City Regiment, but it has been taken over by the War Office as a camp for German military prisoners.

WILLESDEN CLOTH.

This material is now in large demand for officers camp equipment, portions of bedding, buckets, bath, etc., being made of it. No rubber enters into its composition, which consists of a stout cotton twill rendered waterproof by an organic salt of copper. It has long been used by the Post Office Department for mail bags and is always recognizable by its bright green color. I understand that the patent has now run out so that there is no monopoly in the manufacture.

DR. CARL W. THIEL.

Dr. Carl W. Thiel, who returned from Germany to Messrs. Reddaway's works at Manchester on an agreement for a term of years, went back to Hamburg at the close of the period.

RUBBER FLOORING.

The rubber flooring laid in the Stephen Ward of Guy's Hospital, London, by the Rubber Growers' Association, was presented to the hospital on October 6 by Lady French, wife of the Field Marshal at the moment so much in the limelight. Numerous invitations to the ceremony and afternoon tea were issued to rubber men and others by the president and governors of the hospital. The flooring was made and laid by the Leyland & Birmingham Rubber Co., Ltd. Mr. McEwan, chairman of the Rubber Growers' Association, in the course of a speech, said that about 170 rubber companies had contributed, also stating the association had presented 1,000 hot water bottles made of plantation rubber to the British Red Cross Society.

SILVERTOWN RUBBER WORKS EMPLOYES AID THE ALLIES.

Voluntary subscriptions by employes of the Silvertown works of the India Rubber, Gutta Percha & Telegraph Works Co., Ltd., to a war relief fund of their own organization amounted in four weeks to £100, half of which sum was donated to the National or Prince of Wales Fund and the remaining half divided equally between the British Red Cross Society and the Belgian Relief Fund. The intention is to send similar sums, at least, to each fund every four weeks as long as may be necessary. Since the commencement of the war about one-fifth of the male employes of the company of suitable age have left for military service.

BRITISH TRADE NEWS NOTES.

THE North British Rubber Co., Ltd., whose plant at Castle Mills, Edinburgh, is said to be the largest rubber manufacturing plant in the British Empire, is paying half wages to all married employes engaged in active war service, and to those of the unmarried men similarly engaged who have relatives dependent upon them. In addition, positions will be kept open for these employes until the close of the war.

A. Schrader's Son, Inc., of Brooklyn, engaged in the manufacture of tire valves and tire pressure gages, has opened a factory branch in London, at 14-16 Dorset place, following out arrangements made before war broke out. This branch, in charge of W. H. Cole, is expected to be in operation during the present month.

Forty-five members of the office and works staff of Messrs. David Bridge & Co., Ltd., rubber machinists, Castleton, Manchester, have joined the British colors. Weekly allowances are being made to those dependent on them.

Two of the plans for the introduction of rubber tiling in London for use as hospital flooring have been carried into effect. In both cases the plantation rubber used was donated by the Rubber Growers' Association. Stephen Ward at Guy's Hospital has been paved with rubber tiling manufactured by the Leyland & Birmingham Rubber Co., Ltd., while a second gift of flooring has been made to the Children's Hospital, Great Ormond street, London.

St. Michael's Church, Cornhill, London, has been paved with rubber tiling, which is said to have much improved the acoustic properties of the edifice.

Complaints are heard from England that the sporting goods trade is in a condition of unprecedented depression as a result of the number of customers drafted for combative purposes. Reduction of staff or suspension of production has been threatening the activity of large concerns. Men of advanced years now form the bulk of those still adhering to golf and other outdoor sports.

The contractors supplying the Birmingham Corporation have been notified that all German and Austrian goods will in future be strictly excluded from the supplies to be furnished to that body. Rubber articles for surface cars, ebonite and vulcanite for electrical purposes, asbestos and other insulating substances are among the goods thus affected, as well as a large quantity of mechanical fittings. As to rubber erasers and elastic bands, British manufacturers have for some time past taken this business from their Austrian rivals, while in the latter article there has been keen competition from America. This municipal business in the various sections of the rubber industry is of importance and merits the attention of American manufacturers.

The Avon India Rubber Co., Ltd., of Melksham, Wiltshire, is contributing toward the Prince of Wales Relief Fund 2*s.* for every dozen Avon golf balls sold, a sum which is said to practically absorb the profit on the sale. About 20 per cent. of the employes of this company joined the colors within a month of the declaration of war.

About 200 employes of Messrs. Charles Macintosh & Co., Limited, Manchester, have joined the ranks of the British army, relief being given their dependents by the company. Some sixty Wood-Milne hands have offered their services, special allowances being made their families, in addition to the contributions of the concern's workmen who are still employed.

International Rubber Conference.

Predominance of Papers by Rubber Chemists.

IN examining the papers read at the recent International Congress held in conjunction with this year's Rubber Exhibition in London, one is struck by the great change that has taken place since the previous Congress in the subjects chosen for discussion. Whereas, three years ago, the papers nearly all dealt with rubber in one or other of its botanical aspects, on the present occasion the chemist and the manufacturer practically monopolized the stage. The great majority of the papers were intensely technical, whilst the various debatable points were almost exclusively thrashed out by rubber chemists. In illustration of this it may be mentioned that while de Wildeman's contribution on "The Cultivation of the Rubber Vine in Central Africa" seemed to arouse hardly a vestige of interest, Helbronner's paper on "The Vulcanization of Rubber by Ultra-Violet Rays" and Schidrowitz's discourse on "Variability" met with receptions indicative of the most acute interest.

This change of ground from the field of cultivation to the realm of the chemist was duly noted by the chairman, Dr. Torrey. His remarks in this connection are worth recording. "The first paper at the last Congress," he said, "was one which led to the most active and spirited discussion I have ever heard on any paper, and at the end of the time the entire conference practically demanded that there should be more time given for the discussion. The result was that on the next day an extra two hours had to be assigned to it. And what do you suppose the subject was? Well, it was 'The Forest Growth of *Funtumia Elastica*.' If the first paper at this Congress had opened on that subject it would have cleared the room in twenty minutes. That was three years ago and I mention the incident just to show how things have moved on."

HEVEA WITHOUT A RIVAL.

Much has been learned in the meantime as to the capacity and economic value of the various latex yielding trees. In point of fact it may be said that so far as the planter is concerned, a process of elimination has been going on which has left *Hevea Brasiliensis* without a rival in the estimation of the rubber grower of the Orient. The planter of the Middle East is generally familiar with *Castilloa*, *Ceara* and *Ficus*, and after much experimenting he has discarded them all in turn as unworthy to hold a candle to *Hevea* as a plantation tree. In Java and Sumatra, some years ago, the Dutch laid out many hundreds of acres with Rambong. These trees are now being steadily cut out to give place to *Hevea* and, in some cases, *Ficus* trees have been felled by the hundred to make way for the more reliable and better yielding native of Brazil.

As to the value and treatment of various species growing wild in the African forest, with the fall in prices and the rise of the plantation industry, growers and consumers have lost all interest. Hence the papers at this conference dealt almost exclusively either with the treatment of *Hevea*, the treatment of the product, or the behavior of the same when subjected to various chemical processes.

OLD PROBLEM REVIEWED.

To the non-scientific, or rather to the practical, mind, one of the most interesting papers was that by A. Irving on "A Comparison of Wild and Plantation Rubber." The author, in addition to being a planter of some experience in both Ceylon and Malaya, was recently commissioned by the Brazilian Government to visit the Amazon Valley, with a view to introducing better methods of production and to advise as to the establishment of a plantation industry in that region. One or two points in his discourse may be referred to. The fact, for example, that trees in the Amazon are generally at least thirty years old before they can be profitably tapped—comparing with four years in the case of plantation trees—may have considerable bearing upon the relative quality of the rubber produced. Mr. Irving also remarked that he had often been asked what reserves of rubber trees there were in the Amazon Basin. His reply was that there were many millions of unworked trees in the country, but their inaccessibility rendered them an unrealizable asset with rubber at its present price.

The discussion that ensued was a very interesting one, for it revolved round the question as to whether the Eastern plantations are in reality operating with the best variety of *Hevea*. The late Dr. Huber, who made a wide tour of the plantation zone, is generally credited with the definite statement that it is the true *Hevea* that has been planted in the Orient. Mr. Irving stated, however, that he had seen as many as six different varieties growing together in Brazil and was informed by all with whom he came in contact that Wickham had not succeeded in getting the best variety of rubber seed, namely, that of the Black *Hevea*. Wickham holds a contrary view and has asserted it with ample testimony on more than one occasion. Dr. Werner Esch, who was prominent in most of the discussions, said that he had heard Dr. Huber himself state that the variety of *Hevea* found on Mid-Eastern estates was other than that recognized as the best in the Amazon Valley. He disputed the general interpretation given to Huber's words and reiterated the statement that this authority had personally told him the plantations have not got the same tree. The mystery thus becomes deeper than ever. It is, however, one that is scarcely likely to perturb the plantation industry.

PREFERENCE FOR UNSMOKED RUBBER.

Another practical paper was on the "Advantages and Defects of Plantation Rubber," by Mr. W. A. Williams, the general works superintendent of the North British Rubber Co., Ltd. He contended that the introduction of plantation rubber had been the means of displacing "mediums" to a very great extent, simply because its use in the factory had given less trouble in manufacturing operations and better results with an attendant reduction in the manufacturing cost. As a displacer of mediums, he said, plantation rubber had made a bold bid for the market and had been successful. In other respects Mr. Williams gave expression to views which are certainly unorthodox, albeit the more interesting on that account. After repeated trials he had found that unsmoked biscuits and sheet gave the best all-round results, and were to be recommended for the reasons that for strength and uniformity they were quite as good as smoked sheet and were undoubtedly superior to crêped or blocked rubber. With crêped rubber he was afraid the planters had sacrificed everything to appearance, the one object apparently being the turning out of a nicely finished, attractive looking product. Crêping and grinding of the rubber should, in his opinion, be left entirely to the factory side and it should be the aim of planters to turn out their rubber as strong as they possibly could. In conclusion, he put in a plea for a closer working relationship between producers and consumers.

This paper gave rise to very little discussion. Here it may be observed that very few manufacturers supported the conference, presumably on the ground that such experience as

they have gained by much observation and experiment is their own peculiar property. Nevertheless, an expression of views on broad lines, such as in the foregoing paper, could hardly be detrimental to any individual interest and might conceivably be helpful to the industry as a whole.

VULCANIZATION BY ULTRA-VIOLET RAYS.

Probably the most controversial papers were those read by Bernstein and Helbronner on "The Study of Rubber Solution Vulcanized by the Ultra-Violet Rays" and the other on "Vulcanization." The two subjects were, as a matter of fact, dealt with as one paper. They provided what might be termed the sensation of the Congress. A very animated discussion ensued. The idea put forward was a new one and it brought out some very interesting remarks from Sir Wm. Ramsay. The joint authors of the paper claimed to have arrived at a solution of a problem of depolymerization and repolymerization, but it was not claimed that it could be applied to general vulcanization. Helbronner stated that in the course of his experiments he made about one hundred analyses. It may be added that the sample which was handed round to demonstrate the effect of their solution was generally considered hardly satisfactory. In this instance the chairman had to bring the discussion to a close after expressing a hope that it might be possible to reopen it at a later stage.

PROBLEM OF THE DAY.

Another very important paper, dealing, as it did, with the question of the day, was that by Dr. Schidrowitz on "Variability," although, as the author put it, his treatment of the subject was only to be regarded as quite preliminary. One fact that came out in the ensuing discussion was of great interest. Dr. Schidrowitz, in explaining a point in connection with average results, stated that he obtained superior results from the better types of plantation rubber than from average washed samples of fine hard Pará. "Whereas," he remarked, "we frequently get a genuine index figure from plantation rubber, unwashed, of well over 1,000, the average fine sample of washed Pará becomes rather lower, the figure in this case being something like 900." In reply to a remark by Mr. W. A. Williams as to the "human element" in mixings, Dr. Schidrowitz asserted that one could, to a very large extent, get over this difficulty by using one of the new type of mechanical mixers, which eliminates handling.

MR. P. L. WORMLEY'S PAPER.

Much interest was also displayed in the paper on "Influence of Temperature on Physical Properties of Rubber," by Mr. P. L. Wormley, of the United States Bureau of Standards, and in that by Mr. D. E. Douty, of the United States Conditioning & Testing Co., on "Some American Methods of Testing Mechanical Rubber Goods." In connection with the former paper much curiosity was evinced as to the methods employed in the Bureau of Standards at Washington. The chairman remarked that the influence of temperature upon rubber was of great importance and had not hitherto received adequate attention. In reply to a question as to whether any attempt had been made to separate the effects between the greater distensibility of the rubber at high temperature and its expansion or contraction, Mr. Douty answered in the negative and added that the speed at which the rubbers were stretched was so slow that there was no danger of heating up. Dr. Esch observed that a temperature of 70 degs. in a test for elongation and tensile strength would not be practicable with mixings containing balata or guttapercha. In reply Mr. Douty pointed out that it was not proposed to make one standard temperature for all tests, but to determine the temperature at which tests for certain goods should be carried out.

"ABNORMAL EFFLORESCENCE OF DISCOVERIES."

At an exhibition devoted almost entirely to natural rubber and its means of exploitation, and among men who had so much at stake in a like connection, it is scarcely to be wondered at that the paper on "Synthetic Rubber," by M. Gaston Chardet, should have received a somewhat frigid reception. Yet the author handled his subject cleverly and impartially and not without touches of subtle humor. "In that department of organic chemistry," he observed, "a phenomenon unique in the history of science had been witnessed, an abnormal efflorescence of discoveries and of patents launched upon the world by inventors, well meaning if not always the most capable." Chardet virtually admitted that rubber synthesis is a subject only of academic interest. He complained that in such investigations the public saw only the money result. The result was nothing—the effort was everything; and the value of the work must not be measured by its success. Synthetic rubber was not a great industrial discovery, but it would be none the less a great scientific discovery.

One may imagine that the utilitarian element was uppermost in M. Chardet's audience. Dr. Slocum, who read the paper, appeared to disapprove of it almost in its entirety. His view was that the chemist interested in synthetic rubber should devote his attention to producing a new rubber rather than in competing with the existing forms of natural rubber. He thought the production of a new gutta-percha or balata was the happiest thing for the synthetic chemist to aim at. Furthermore, he questioned the possibility of the by-products being of any real commercial utility. The whole subject was apparently regarded with so little interest by the Congress that after the few remarks of Dr. Slocum discussion entirely ceased.

A COINCIDENCE.

A paper on "Experiments in the Direct Determination of Mineral in Rubber Mixings" was described by Dr. Torrey as one of the most instructive ever provided on the subject. The authors were Messrs. B. D. Porritt and R. Wheatley, the former being the chief chemist of the North British Rubber Co., Ltd. A significant coincidence occurred in connection with this paper. Another on precisely similar lines had been volunteered by Mr. H. Williams Jones and although the authors had not conferred together in any way they arrived at conclusions practically identical.

This brief survey does not, of course, cover the whole of the papers read at the conference. Attention has merely been given to those which aroused the greatest interest and gave rise to most discussion. It is understood that the entire series will shortly be published in book form, when those who wish will be enabled to study them in detail.

ENGLISH ARMY BUSINESS IN WATERPROOF GARMENTS.

According to latest reports, the production of waterproof fabrics has not equaled the demand. One large order for garments, placed some weeks ago by the English Government, exhausted the whole available stock of heavy sateens and similar fabrics.

All stocks of heavyweight coats have been cleaned out and further orders placed for thousands more. Large government orders for motorcycle suits took off all stocks of goods for that purpose and necessitated placing further orders.

This unexpectedly large business has caused overtime work in the garment industry, the demand exceeding anything ever looked for.

SWIMMING COLLARS FOR BRITISH NAVY.

The British Admiralty has recently arranged for a supply of swimming collars to be distributed to the officers and men of the fleet, and instructions have been issued that this protective device be worn by the men when awake, and kept inflated and near each man when he is asleep.

"GALBULOSE," A NEW PROOFING.

JUST what "Galbulose" is made of the inventor, William Mackintosh, of Liverpool, England, refuses to state. He does say that it is a chemical combination of a fossil resin and cellulose. The raw product looks like sheet balata, and this, treated with a certain solvent, is spread on cloth for proofing, just as rubber is. The product, be it said, is called "Zama" cloth. Mr. Mackintosh has a factory near Liverpool, operated by the Zama Co., Ltd., and an American factory at Springside, Stamford, Connecticut. This is called the British American Manufacturing Co. He claims to have orders for army blankets, tents and ponchos from the British and French governments and to have sold some four hundred thousand yards to the United States government.

As an old rubber man, Mr. Mackintosh ought to know what the trade calls for in coated fabrics. He started with the North British Rubber Co., Ltd., in 1880, and was with them for ten years. Then he went to the Harburg-Wien Co., then back to England to the Silvertown Co. After a bit he went with the Austrian-American Co., then with the Continental at Hannover, then with Reithoffer in Austria, then with Klinger in Hungary. Leaving the German speaking peoples, he spent three years in the rubber shoe factory at Malmo, Sweden, after which he signed up with the International Co. at Brussels, Belgium. In 1907 he returned to England and engaged in proofing on his own account—and Galbulose is the result. At present he is making, besides army blankets and ponchos, hospital sheet, aeroplane double texture cloth, etc.

1. PONCHO AS WORN WHEN CARRYING ARMS. 2. CAPE WHICH COVERS BLANKET AND EQUIPMENT WHEN MARCHING. 3. AS A GROUND SHEET OR SLEEPING POUCH. 4. SLICKER SHOWING OPENING FOR CAVALRY.

PONCHOS USED AS A TENT.

ENGLISH CONFIDENCE RESTORED.

On the declaration of war, English rubber manufacturers and dealers in rubber goods felt much alarmed at the prospects. The prompt action of the Government in taking over private cars and in purchasing liberally from manufacturers, speedily restored confidence in various important lines. These conditions have become still more favorable by the fact that the owners of the cars requisitioned have been placing orders for new vehicles, and that the war office is continuing to order motors freely.

The present war is one of motors; every conceivable form of automobile having been impressed in thousands into the service of the English and Continental armies.

ENGLISH MOTOR AND TIRE BUSINESS.

An enormous order for motor cars is said to have been secured from the Russian Government by the Austin Motor Company, which, it is understood, will indirectly benefit the Dunlop Tire Co., whose tires have been in the past largely used by the above-named company.

The Birmingham depot of Pirelli & Co., Milan, has received an important shipment of tires and cables from its Italian factory. This concern has been showing the "basket" tire, a new model, 32 x 4 inches, which has non-skid qualities but dispenses with the use of steel studs.

The accepted authority on South American rubber—"The Rubber Country of the Amazon," by Henry C. Pearson.

Rubber Notes From Germany.

SINCE the declaration of war, rubber manufacturers have been in many cases very busy on government contracts. Technical articles, automobile tires and hospital supplies have been the chief features of recent production.

While these government contracts have made some concerns very busy, their importance must not be overestimated. Although intrinsically of importance, they do not make up for the lack of export trade they involve. On the whole, the rubber industry is suffering from the absence of its working force, which has in many cases necessitated operating on short time, and in some instances complete suspension.

Another source of trouble has been the fact of the government claiming the available stocks of benzine and benzole, in order to provide for the prospective requirements of military motor traction. When this claim was first made, the details of the existing stock were not known and there were well-grounded fears of a deficiency. Any such scarcity would have affected the supply of solvents for the rubber industry. Fortunately, it is now ascertained that there is a sufficient stock of these articles at the disposal of the government to provide for the requirements of motor traction and the fears of rubber manufacturers have been dispelled to such an extent that numerous plants are in operation which had been working on a reduced scale under the apprehension of a dearth of solvents. The government authorities have facilitated the execution of their own orders by permitting the use of the necessary solvents by the manufacturers for that purpose.

At an early period of the hostilities, a suggestion was made for the establishment of maximum prices for rubber, but the conclusion was reached that in view of the present difficulties attending transportation, such a course was undesirable. The principal works are said to be supplied with enough rubber for several months' consumption.

ENGLISH OPPOSITION TO GERMAN PATENTS.

A recent Paris report stated that the English government had declared all German patents and trade-marks outlawed. Further information showed that the above statement was not strictly correct. The facts were that a law enacted gave the Board of Trade authority to make regulations for the total or partial revocation, or for the temporary suspension, of patents or trade-marks for the protection of subjects of a power at war with England. The regulations issued by the Board of Trade are said to leave it to the interested parties to impugn the patents and trade-marks which protect natives of countries at war with England, or which are opposed to English interests.

For this purpose an application to the Patent Office is needed, in which the applicant has to show that he has a serious intention of operating the patent, or of marketing the goods protected by the mark, and that his application is in the public interest.

When these conditions have been fulfilled, the patent or mark attacked can be declared invalid or can be put out of force until further notice. As the fulfilment of the conditions named presents no difficulties to the interested parties, this plan is regarded in Germany as being equivalent to the abolition of protection to Germans by England.

The question of retaliation has been occupying the attention of the German government, representatives of which have been in communication with the rubber industry.

EXPORT TRADE WITH NEUTRAL COUNTRIES.

German manufacturers, while recognizing the difficulties now attending export trade with their former customers, have been giving attention to the question of conducting such trade with and through neutral countries, or with German houses in the markets they wish to reach. They hope in this way to parry the attacks of England in her "war to the knife" commercial policy. Germany and Austria have made joint preparations for warding off the threatened danger.

From another point of view, Germany feels that she is too good a customer of various foreign nations for them to risk with indifference the loss of the German market.

CAMPAIGN REQUIREMENTS IN RUBBER GOODS.

Among the articles now being made by German manufacturers for service in the war are "Bandage Packages" intended to be carried by the soldier for his own use. They contain a sterilized strip of wadding, attached to a muslin bandage and covered with cambric. This outfit is sterilized and, according to its composition, packed in paper, waterproof fabric or similar material. It is fastened with a safety pin or with clips. Its practical value is that a soldier might bleed to death if he had not provided himself with one, or if a comrade had not this "self-bandaging" equipment. Pocket drug outfits also come under the same heading.

Inner soles of rubber and other materials are likewise worn to a considerable extent, but half soles have the disadvantage of creasing in the boot. For the special use of reservists who have exchanged a sedentary for a military life, rubber-sponge soles have been much approved as preventing the dreaded "horny skin" on the soles of the feet. Its durability renders the rubber-sponge sole particularly suitable for use in war.

Toilet bags (waterproof) form another group and are meant to carry a piece of soap, a rubber sponge, a tooth brush and other necessary articles.

Waterproof clothing has become an important item of military equipment, particularly in the form of waterproof vests of rubberized material, as a protection against being "drenched to the skin." The importance has been urged of rubber goods manufacturers retaining their hold on the trade in these articles and not letting outfitting houses take it out of their hands. For saving uniforms, mantles have been brought out which are specially adapted for that purpose, being very light and thin. Another article is the "breast bag" for carrying various articles, as well as the rubber drinking cup. Thus in many objects of general utility, in addition to medical supplies, rubber contributes to the soldiers' comfort.

THE WAR AND THE GERMAN RUBBER INDUSTRY.

For three weeks after the declaration of war by Germany freight traffic was practically suspended, only the requirements of the army and navy, or those for maintenance of the railways, being transported. The removal of the prohibition improved the situation, in which improvement the mining industry largely participated. Prices for all raw materials have considerably advanced, increased rates for asbestos products, steam packing and technical rubber goods being regarded as unavoidable in the near future. Crude asbestos cannot enter Germany from its principal sources (Canada and Siberia). Each factory having to depend on its stores of the article, it is predicted that the manufacture of articles composed of rubber and asbestos will soon come to a standstill.

The whole rubber industry is reported to be stagnant, many plants being closed down. The export of balls, toys, etc., has almost completely ceased, and it is thought that imports of crude rubber will be for a long time on a reduced scale. As to coal and other raw materials than those above referred to it is understood that the rubber industry is sufficiently provided with supplies. The hands necessary for the manufacture of tires for

automobiles, motor trucks and bicycles, as well as of surgical articles, have been released by the military authorities.

Many plants in Eastern Prussia have been destroyed by the Russian invading forces. What the ultimate salvage may be it is impossible to define at present.

ADVERTISING RUBBER CLOAKS AND SHOES.

In spite of the war and the reduced purchasing capacity of the general public, German manufacturers still anticipate fall demands for rubber cloaks and rubber shoes, encouraged by advertising. This year, however, German goods will be asked for in place of English cloaks and Russian shoes—the demand being well within the capacity of the German industry. Preparations were made in the early part of the year, and a scarcity of goods is therefore not anticipated. The importance has been urged of manufacturers maintaining prices for German products of standard quality, instead of diminishing the value of the goods by cut prices.

LIBERAL ACTION OF EMPLOYERS

Every effort has been made to help the families of the workers called to the front. In some cases the families of the married men are drawing full salaries, while in most cases half wages are being paid. These payments are supplemented by contributions from the factory benevolent funds and from private sources. In the case of Traun & Sons, Hamburg, the factory fund had been running 100 years. The plant of Philip Penin, Leipzig-Plagewitz, has only dismissed a few hands, and has kept in nearly full operation.

DEATH OF A VETERAN GERMAN RUBBER MANUFACTURER.

At the ripe age of 92, Privy Councillor Wilhelm Herz passed away on September 28. He had been at the head of the well-known Berlin rubber manufacturing firm, S. Herz, and his end was a surprise to his many friends, who had been witnesses of his activity up to within a fortnight of his death. His memory will long be cherished as the Nestor of the German rubber industry.

GERMAN CONTRACTS FOR FOREIGN RUBBER SHOES.

In answering a correspondent who had asked the position of contracts for St. Petersburg and Edinburgh rubber shoes, the "Gummi-Zeitung" lately wrote that all purchases and contracts in themselves remain in force notwithstanding war, but if the war renders delivery impossible, buyers and sellers are released from their obligations without having claims for compensation.

Hamburg shipping agents are advertising steamer facilities to oversea countries from Amsterdam, Rotterdam, Copenhagen, Stockholm and Göteborg. The "Hansa Alliance" has opened an office at Stettin for the guidance of manufacturers desirous of shipping through neutral Scandinavian ports.

Among the large contributors to the German war loan is the Continental Caoutchouc & Gutta Percha Co., of Hanover, which has signed for nearly $50,000.

AUSTRIAN PROHIBITION OF RUBBER IN TRANSIT.

According to an Austrian ministerial ordinance of September 11, india rubber, gutta percha, balata (crude or purified, as well as waste from those substances, and also rubber substitutes) are included among the articles of which the export and transportation are prohibited.

"SEMPERIT" WORKS PROVIDING FOR FAMILIES OF WORKMEN CALLED TO WAR.

The "Semperit" Austro-American Rubber Works, of Vienna, is paying full salaries to the families of married workers called to war, and to the representatives of unmarried workers a long time in its service, while those of the workers who have been a short time in its employment will draw half salaries.

GERMAN RUBBER MEN SUPPOSED PRISONERS OF WAR.

At the opening of the campaign, Messrs. Clar and Tenz, natives of Germany, section managers at the Colonial rubber plant in Ghent, were taken prisoners. Not having been heard from since, their friends are becoming anxious regarding them.

MINERAL LUBRICANTS SCARCE.

The reduction of imports, in conjunction with the fact that the government has taken possession of the stocks of lubricants, has produced serious trouble. Prices have considerably advanced, which is to the benefit of firms holding stocks. Imports of Russian oils have entirely ceased, which renders it necessary to have recourse to the more extensive use of American oils, in some cases mixed with vegetable oils. The oil business is the most active in the technical branch, while rubber and asbestos are relatively quiet.

AN EDITOR BECOMES A LIEUTENANT.

Dr. Karl Gottlob, chemist of the Farbenfabriken, formerly Friedr. Bayer & Co., Elberfeld, is an Austrian infantry lieutenant in the present campaign. Dr. Gottlob is well known to the rubber industry as the editor of the "Gummi-Kalender."

ENGLISH RUBBER IMPORTS (IN TONS) FOR MONTH OF SEPTEMBER.

From—	1912.	1913.	1914.
Straits Settlements .....*tons*	915	1,600	1,700
Federated Malay States	600	1,000	715
Ceylon	410	709	1,130
French West Africa	77	47	5
Gold Coast	27	19	8
Brazil	1,034	657	522
Peru	145	116	13
Other countries	1,150	1,765	1,016
Total, September	4,358	5,913	5,109
Total for eight months to the end of August	34,805	46,421	44,427

Above figures are those of the English Board of Trade for the month of September for the last three years, and show the falling off in wild rubber, as well as the gain in plantation grades.

RAINCOATS IN THE ENGLISH ARMY.

There is vastly more fight in a dry soldier than there is in a wet one, or at least in one who has been very wet for a long time. Here are illustrations showing weatherproof garments which are made both for the British infantry and cavalry. The first cut shows the service dress in which the wearer, while unencumbered by a long coat, is still thoroughly protected from inclement weather. The other cut shows a long raincoat coming well below the knees, being full in the shoulders and sleeves and having an ample width of skirt so as not to impede the wearer's movements. [Burberrys, Haymarket, London.]

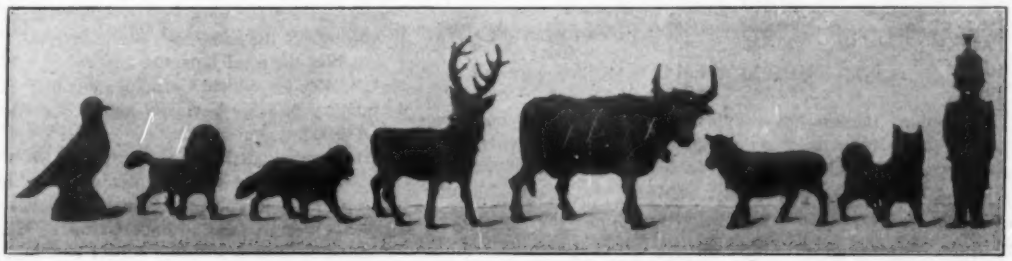
FRENCH OPINION OF VALIDITY OF CONTRACTS.

The Chamber of Commerce of Toulouse has officially pronounced the opinion that war does not in itself annul contracts; only doing so in the event of business being brought to a stop. Such is the general view of the French Chambers of Commerce, founded on the opinions expressed by jurists after the war of 1870.

German Rubber Toys.

WITH the practical cessation of the German export of manutured products of almost every name and nature, comes the call, the world over, for the substitution of the same goods of other makes.

At this time of the year none are more clamorously sought than toys. What a rubber industry Germany had built up of toys of all kinds, the whole world knows. The total yearly exports in toys and games, as given by a British compilation of statistics, amounted roughly to $7,017,201. This, of course, means toys of all kinds, but among them rubber toys were produced in greater quantity than anywhere else in the world.



In a great many of the German factories immense departments were devoted to the production of rubber toys alone. One factory whose toy molds ran into tens of thousands possessed different types for over 500 varieties in ordinary use. These embraced for complete dolls 100 patterns; dolls' heads, 20 patterns; animals, 100; birds, 26; soldiers, 50; reptiles, 10, and combinations — soldiers and riders — and novelties, many hundreds.

These rubber toys were very largely made by hand and where popular types continued year in and year out certain workers got to be very expert in turning them out. The molds as a rule were of soft metal and made in one of the factory departments. A special type of mold, it is said, was made for certain of these goods out of soapstone. This of course was a matter of hand engraving and difficult. Certain artisans, however, expert in all kinds of engraving, did wonderful work and that very cheaply. Soapstone molds have to be used with care and are only fitted for goods that do not require cooling. The stone keeps its heat a long time and gives an even, gentle heat.

These toys were made up in plain white, or red, and oftentimes in white rubber, gorgeously painted. They were all artistic conceptions, artistic even in their grotesqueness, and were created to appeal to children in all parts of the world.

From the hundreds of types a few typical illustrations serve to prove the excellence of the German rubber toys, an excellence it will be difficult for any manufacturer to equal at short notice.

JAPANESE INDUSTRY AND THE EUROPEAN WAR.

By Our Regular Correspondent.

GOING back some 20 years the development of the Japanese rubber industry is shown by a comparison between the imports of the crude article at different periods:

	Pounds.	Value.	Period.
1894	36,166	$12,888	China-Japan War.
1895	27,553	11,556	
1904	485,284	284,327	Russo-Japanese War.
1905	733,836	422,975	
1912	2,004,030	1,514,557	
1913	2,681,943	1,725,922	

A similar, though not proportional, development took place during the period named in the Japanese imports of rubber manufactures: 1894, $94,593; 1895, $153,375; 1904, $796,599; 1905, $1,742,221; 1912, $5,275,815; 1913, $4,043,469.

While it may thus be seen that the previous wars in which Japan was engaged were apparently of benefit to the rubber goods import trade of that country, such is not likely to be the case with the present hostilities. On the earlier occasions, the contests were only between two countries, without serious injury to steamship lines and foreign trade, while the present war affects European, Asiatic and other commerce, particularly that of Germany with those markets. The consequent disturbance of trading relations has led to advances in the Japanese prices of crude rubber, compounding ingredients and acccessories.

CRUDE RUBBER.

On the outbreak of the war plantation biscuit rubber advanced in Japan from 1 yen (50 cents) to yen 1.60 (80 cents) per pound. At time of writing it had declined to yen 1.30 (65 cents). As to the future course of the market the opinions of consumers are divided. Some consider that within a few months a good deal of crude rubber will be imported to Japan. Hence manufacturers holding these views are not disposed to increase their stocks at present prices. Others, on the contrary, see prospects of values being maintained, not recognizing the likelihood of large early imports. Rubber traders are selling or keeping their stocks according to their opinions as to the future course of the market.

COMPOUNDING INGREDIENTS.

A marked advance has taken place in compounding ingredients for the rubber industry. Glycerine has risen 400 per cent.; lithopone 250 per cent. Colors have likewise advanced, 80 per cent. of the supply coming from Germany. Dealers are indisposed to handle German colors in view of the uncertainty of receiving them in case the war is protracted. Japanese manufacturers have been making some ingredients, but have been advancing prices. The zinc white made by the Nipon Paint Manufacturing Co., of Tokio, has risen from yen 11.50 ($5.75) to yen 16.50 ($8.25) per 100 pounds, being made from high-priced imported zinc. Magnesia has likewise gone up. Some ingredients have been notably scarce, such as litharge, of which the Naval Department bought up many tons at the opening of the war.

SCRAP RUBBER AND ACCESSORIES.

Activity is not looked for in the Japanese scrap rubber market, which has so far been dull this year. The principal imports come from Shanghai, and any disturbance of steamer communication with that port would be reflected in the Japanese market.

Coal, oil, cotton cloths and metals have generally advanced from 10 to 50 per cent.

POLICY OF JAPANESE MANUFACTURERS.

Efforts made to establish a combination of important manufacturers have proved void of result. A conference recently took place between seven representatives of the four largest Tokio rubber manufacturers: Mitatsuchi Rubber Manufacturing Co., Meiji Rubber Works, Nipon Rubber Co., Limited, and Toyo Rubber Co., Limited, with a view to a general advance in prices. The combine was, however, not formed, in view of the fear being entertained of competition from outside manufacturers. It was further apprehended by the makers present that by putting up prices they might lose their agents or their customers. Confidence was, moreover, expressed in being able to produce goods at lower prices, to meet competition.

The Japanese authorities are urging the use of domestic made goods instead of imported merchandise, thus adopting the policy being carried out by England. Various patriotic associations are working for the same end, particularly as to bicycle tires.

In 1913 the total Japanese imports of rubber manufactures were $4,043,469, of which Germany supplied $1,231,774 and Austria-Hungary $3,525. Germany supplied crude rubber to the extent of $18,000.

It is anticipated that the result of the war will possibly be to decrease Japanese imports of rubber manufactures and to increase those of crude rubber. Japanese manufacturers foresee an important development of export trade. The last-named branch of commerce already includes rubber clothing, insulated electric wire, rubber balls and rubber toy balloons.

PRIZES AT THE RECENT TOKIO "TAISHO" EXHIBITION.

The awards at the recent Tokio Taisho exhibition included the following: HONORABLE GREAT MEDAL—Mitatsuchi Rubber Manufacturing Co., Tokio; Yokohama Electric Wire Works, Limited, Yokohama.

GOLD MEDAL.—Fujikura Electric Wire Co., Limited, Tokio; Meiji Rubber Works, Tokio; B. F. Goodrich Co., Akron, U. S. A.

SILVER MEDAL—Dunlop Rubber Co. (Far East) Limited, Kobe; Toyo Rubber Co., Limited, Tokio; Nipon Rubber Co., Limited, Tokio; Fujikura Electric Wire & Rubber Co., Tokio; Kakuichi Rubber Co., Osaka.

THE RUBBER INDUSTRY IN THE FEDERATED MALAY STATES.

From the Interesting Report of the Director of Agriculture.

LAST year the Federated Malay States produced 23,719 tons of plantation rubber, against 15,506 tons in 1912. This is just over one-half the world's supply which has been computed at 47,000 tons for 1913. The total estate production of Malaya, however, is returned at 28,214 tons, an increase of 9,266 tons over the previous year. The largest increase outside the Federated Malay States comes from Malacca, where the production was doubled during the year, and that Settlement now follows Selangor and Perak in production.

Selangor exported 11,883 tons, Perak 7,659, Negri Sembilan 3,995 and Pahang 182.

It is stated in the report of Mr. L. Lewton-Brain, Director of Agriculture, Federated Malay States, that the area newly planted in 1913 was only 34,127 acres, compared with 54,105 acres in 1912; 107,200 acres in 1911, and 48,821 in 1910. The increase is larger than might have been expected, however, in view of the fall in the price of rubber, and shows that some investors recognize the real soundness of the industry. Selangor maintained the position of having the largest rubber acreage, nearly 195,000 acres, compared with 142,000 in Perak and 96,000 in Negri Sembilan.

The rubber acreage producing in the Federated Malay States is returned at 164,390 acres, an increase of about 28,000 acres over the preceding year. The average yield per acre works out at 275 pounds, and when it is considered that about one-fifth of the whole bearing area has been taken in during the past two years, it will be granted that an estimate of 400 pounds per acre from rubber in full bearing is not too optimistic.

The fall in price, although its rapidity was unfortunate, has not been without its good effects on the plantation industry.

Estates throughout the country have overhauled their expenditures, which had, perhaps, got rather out of hand during the continuance of high prices, and many economies have been effected in all directions.

WILD VERSUS PLANTATION RUBBER.

Inferior grades of wild rubbers, it is expected, will no longer be able to compete with the cleaner and better plantation product, and with an increasing consumption of rubber, even only on past lines, the virtual disappearance of inferior wild grades should steady the market for the cultivated product. The full effect of this, of course, cannot be seen at once, as stocks of these grades had to be disposed of even at unremunerative prices. If manufacturers can expect a steady market at about present prices, there is little doubt that fresh uses will be found for rubber, and thus the increasing supplies of the plantation product coming forward during the next few years will be absorbed.

The estates that suffered worst from the rapidity of the fall in price are those which had only a part of their acreage in bearing and had calculated to use the profits on this to carry the younger areas on to the producing stage. With profits falling off as they did, it was impossible to carry out the original program, and at the same time the issue of fresh capital was rendered very difficult. It was no longer profitable even to tap some 4-5 year old areas which had been counted on to yield a fair profit at 3*s*. (72.98 cents) per pound. The Planters' Loan Fund of the Federated Malay States Government has been of great assistance to many estates in this predicament, and the capital of the fund was increased by a further $1,000,000 during the year, but this new capital was available only for private owners and syndicates and local companies.

A WORD OF ADVICE.

It may now be assumed that rubber can be produced f. o. b. by many estates at 1*s*. (24.33 cents) per pound. Estates with large areas of older rubber and those favorably situated can produce for less than this; but it is not suggested that the majority of the estates will be able to produce at this price for some years.

The increase in the yields from trees as they mature and the reduction in the number of trees per acre by thinning out will insure automatically a steady drop in the cost of production on younger estates. This should be increased by a careful and sound economy, but Mr. Lewton-Brain points out that everything that reduces expenditure is not necessarily economy. In particular, to cut down supervision beyond the point of efficiency is no more true economy than it would be to reduce expenditure on weeding to such a point that the trees become smothered in lalang. Economy in manufacture also seems to him to be carried out on wrong lines; small buildings are often put up when an estate is coming into bearing, which must obviously be scrapped in a year or two, and all work is done by hand. Provided that money is available, it would seem sounder economy to plan from the first for the future requirements of the estate.

CULTIVATION.

In his report Mr. Lewton-Brain makes some important remarks on cultivation and the preparation of rubber for export based upon experiments carried out by various members of the scientific staff of the Federated Malay States Department of Agriculture.

Wider planting is advocated for more rapid growth of trees and more substantial yield. The general view now is that not more than 100 trees should be planted originally to the acre and that eventually about 40 or 50 to the acre should be left. A number of influential planters even favor planting originally not more than 50 trees to the acre. The change that has occurred since a few years ago, when 180 to 200 trees were usually planted, and when 100 trees was regarded as the proper and ideal number to work to, is quite remarkable.

Catch-crops are still in little favor and no planter will adopt this form of cultivation if he can avoid it. Indigo has not proved a success, but with wider spacing between the rubber trees there are possibilities for coffee cultivation as a remunerative crop.

Cover-crops that are not revenue producing are also little in favor among Federated Malay States planters, though a tendency to use them on steeper hillsides is noticed. Mr. Lewton-Brain enumerates certain advantages to be derived from good cover-crops, however, and he also deals with manurial experiments and methods of tapping, and mentions that cultivation of soil as distinguished from the standard clean-weeding is being adopted on a good many estates. In this latter connection he states that an interesting series of experiments has been started at Castleton Estate, Telok Anson (belonging to the department) to test the cost and effects of different systems of cultivation on this type of soil, combined with tests of cover-crops. Experiments in the use of dynamite for cultivation have also been made at Kuala Lumpur and at Castleton, and assistance has been given to a number of estates which were also experimenting.

In regard to tapping Mr. Lewton-Brain says it is clear that if the cost of production per pound of rubber is alone to be considered, the manager will undoubtedly select the alternate day system; incidentally, he will, of course, postpone tapping his trees at all as long as possible. He emphasizes the fact that it is not the profit per pound of rubber produced that alone should be considered, but the profit made per acre, and too much insistence on the reduction in cost per pound of rubber produced is therefore dangerous.

EXPERIMENTS IN MANUFACTURE.

There has probably been more discussion and writing about the subject of plantation rubber manufacture than during any period since the beginning of the industry. The steadily falling price of the plantation product and the disparity in price between this and fine hard Para brought forward innumerable suggestions and theories to explain the supposed inferiority of the plantation product. What manufacturers do complain of, as regards plantation rubber, is not that it is not good, but that it is not uniform in the qualities on which they depend in the manufactured article. Each lot has to be treated differently, otherwise the final product is not of the same quality.

Having stated the problem, Mr. Lewton-Brain sets himself to deal with the solution, and sets forth the experiences of the experimental vulcanizing and testing station established by the Federated Malay States government at Kuala Lumpur. It is one of the most complete in existence. The problem of the variability of plantation rubber is an extremely complicated one, much more so than appears at first sight, and it will probably be years before the full value of the work to be undertaken can be realized. It is at any rate satisfactory to record that the first step has been taken and that real work on the fundamental problem of rubber manufacture has been started. Generally speaking, much more care is being taken on the larger and better equipped plantations to keep their methods and products as uniform as possible, but it is regrettable, he writes, that methods on so many estates are still so haphazard.

The experiments carried out dealt with smoking, drying, dilution of latex, coagulation, fungus "spots," tackiness, etc., and in conclusion Mr. Lewton-Brain deals with insect and other pests of the rubber tree and fungus diseases.

People interested financially in the plantation rubber industry will doubtless be gratified to learn that additions have been made to the staff of the agricultural department and that the Government of the Federated Malay States is doing so much to safeguard the interests of rubber growing, which has become the chief agricultural industry of the country.

Some Rubber Planting Notes.

STATISTICAL POSITION OF RUBBER.

COMING at such a late period of the year, the meeting of Harrisons & Crosfield, Limited, held in London on October 13, was of special interest. As it will be recalled, this company acts as secretary for a number of plantations, and is thus in closer touch with market conditions than any individual estate would be.

In addressing the meeting, Mr. C. Heath Clark, the chairman, remarked that last year the world's production of rubber was 117,000 tons, while consumption represented a slightly larger quantity. The present war conditions render it almost impossible to forecast correctly the rubber market. Two large consumers, Germany and Austria, have been cut off from supplies. It therefore remains to be seen how far the other European countries, together with America, will utilize the whole of the world's production.

Existing conditions he regarded as distinctly favorable. The English stocks, which had been at the end of July 5,543 tons, had fallen by the end of September to 5,416 tons, as compared with 5,859 tons in stock a year ago. Dealing with plantation rubber alone, he adverted to the fact that the total quantity landed in England during the first nine months of the current year had been 30,801 tons, against which there had been deliveries of 30,425 tons, practically the total quantity received having thus gone into consumption.

Since the commencement of the war demand has proved quite satisfactory, prices having been well maintained. A certain falling off in some branches of consumption may have taken place (such as motor cars for pleasure purposes), but there will be an increased demand for motor vehicles to do the work of the world and replace the horses withdrawn for military purposes. Prices during the current year have, on the whole, been maintained better than was anticipated, first grade plantation rubber being somewhat higher in September than it was a year ago.

A feature of importance to the rubber industry has been the reduction in costs, an average saving in the "all-in" (or inclusive) price of 6*d.* per pound having been effected in some ten cases investigated. This reduction he expected to continue, and to be further developed under the strict economy now being exercised in the management of estates by reason of the war. The same cause may probably lead to a reduced production. All needless capital expenditure will cease, and tapping will be avoided until the trees can show a profit.

He anticipated that the collection of wild rubber would continue to show a decrease, the falling off being attributed to difficulties of financing rather than to low prices. Figures show that the rubber exports to England from sources other than the Far East were, during the first nine months of the current year, nearly one-third less than during the corresponding period of last year.

In conclusion, Mr. Clark expressed the opinion that there would be a continued further decrease in supplies from the sources competing with the Far East, adding that whatever might be the temporary effects of the war on the rubber industry, it would still give handsome returns on the capital invested.

SUNGKAI-CHUMOR ESTATES, LIMITED (FEDERATED MALAY STATES).

By the directors' report, presented at the eighth annual meeting of the above company, on October 7, the total area is 1693.8 acres, of which 1469.5 acres are under rubber. The total quantity collected for the year was 347,621 pounds, against a yield for the previous annual period of 279,354 pounds. A quantity of 355,000 pounds is estimated for the year ending June 30, 1915.

The gross price realized was 2*s.* 3.25*d.* (55.24 cents) per pound, while the inclusive cost was 1*s.* 3.71*d.* (31.9 cents), as compared with 1*s.* 9.76*d.* (44.1 cents) for the previous year. For the year ending June 30, 1914, the dividend amounted to 30 per cent.

SECRETS OF PLANTATION SUCCESSES.

The four following axioms have been laid down for the guidance of plantation companies: 1. Close the capital account as soon as possible, so as not to annihilate the progress of the enterprise by an accumulation of financial charges. 2. During the earlier years take all expenses from revenue, without yielding to the temptation of the premature distribution of dividends. 3. Do not increase the planted area beyond the limits allowed by the treasury. In other words, no loans based on the alleged necessity of extending the plantation. 4. Maintain a very capable administrative staff, constantly looking out for economies which might be carried into effect.

HEVEA IN COCHIN CHINA.

A recent number of the Annals of the Rubber Planters of Indo China contains a protest against a statement that the climate of Indo China is relatively too dry for *Hevea*. It is claimed that within the suitable degrees of latitude *Hevea* flourishes admirably. The dry season of four months in no way impairs its growth, while it serves as a protection against the diseases with which Malaya has to contend. As to the output, the yield for 1913 exceeded 4½ pounds of rubber per tree for trees with an average age of 12 years.

"PINK DISEASE" ON MALAYAN RUBBER PLANTATIONS.

In recently addressing the Central Perak Planters' Association Mr. F. J. Brooks, Government Mycologist of the Federated Malay States, expressed the opinion that "Pink Disease" was the most serious of the affections to which rubber trees are subject. The disease was first noticed in 1904, but its spread has been particularly remarked during the last 18 months.

At present it is chiefly found in southern Perak, its ravages extending to northern Selangor. It has likewise been observed in northern Perak, Negri Sembilan and Telok Anson, spreading after heavy rainfall and in thickly planted sections. The disease is caused by a fungus, which attacks every part of the tree above the ground with the exception at first of the leaves. When it has penetrated the bark it extends upward and downward and produces decomposition, the leaves and the affected branches commencing to decay and perish. The disease is most noticeable with trees from 3 to 10 or 15 years of age.

The best means of coping with the "Pink Disease," in Mr. Brooks' opinion, is the system of "Disease Brigades." This is carried out by a sufficient number of men being detailed to go over the whole plantation every three or four weeks so as to deal with the rubber trees and other vegetation affected.

In conclusion, Mr. Brooks expressed the opinion that planters should not be discouraged by the "Pink Disease," as plantation rubber is one of the healthiest of the cultures at present flourishing in the Malayan Peninsula.

ADDITIONAL CUSTOMS DUTIES IN PORTUGUESE ANGOLA.

By a law passed on July 22 last, the following additional customs duties have been levied to defray the cost of public works in the Portuguese Province of Angola:

On all exports from the Province, 1 per cent. ad valorem.

On rubber exported from the Province, 3 per cent. ad valorem.

On all products (except wines from Portugal or Portuguese colonies) imported through ports outside the Conventional Basin of the Kongo, 2 per cent. of the import duties.

Provision is made for the reduction or suspension of the export tax on rubber, according to the price of rubber in European markets.

THE WAR AND THE RUBBER AND BALATA INDUSTRIES OF DUTCH GUIANA.

By Our Regular Correspondent.

IN the September number of THE INDIA RUBBER WORLD mention was made of a company being formed in Paris for the purpose of operating certain wild rubber tracts situated in the Pará district, Dutch Guiana. The capital subscribed was frcs. 5,000,000, or $1,000,000, which would have paid the owners of the lands and left a considerable working capital.

Every arrangement was made for beginning operations, an expert was sent out to Dutch Guiana to examine and take over the concessions, when, all of a sudden, the accursed European war broke out, and a sudden stop to the whole business was the consequence. These concessions are again in the market, and this time, we understand, can be had for considerably less than the amount subscribed by the French concern. We have been informed on good authority that no reasonable offer will be refused by the proprietors of these lands. This is undoubtedly an opportunity for American capitalists on the lookout for good bargains.

The war has had a very bad effect on local industries, and the balata industry has especially fallen a victim to the consequences of this terrible conflict. The entire community, with very few exceptions, is suffering for want of employment and the means of earning a living. The balata industry alone employed about 5,000 men continuously, and now that the business is stopped, they and their families are thrown on the streets to beg for bread.

How long this state of affairs may last is hard to say, but we understand the government has decided to open up some sort of relief work whereby the natives, at least, may earn a little money. A great many British subjects have been granted free passage by the government, and have returned to British Guiana,

IN THE FOREST AMONG THE BALATA TREES, SURINAM.

where conditions are said to be better. Great fear is entertained that should the war last very much longer the balata industry will be entirely ruined. The warehouses of the various concessionaries—in Paramaribo—are stocked with thousands of pounds of balata which cannot be shipped away. In the bush many bleeders have also thousands of pounds stowed away. To bring it into town would be useless; it cannot be sold, not even at 25 American cents per pound. The large companies, with head offices in Holland, cannot obtain money to finance their enterprises; dissatisfaction prevails, and a general smash-up stares the balata industry in the face. Although Dutch Guiana is situated thousands of miles away from the seat of war, the distress and stagnation of business is most alarming.

We predicted in previous correspondence that 1914 would be a record production year, and, although unforeseen circumstances have since taken place, the production from January to August 31 reached 600,000 kilograms. At the outbreak of the war the production for the year stood at 482,363 kilograms, when the season was at its height. All operations have been suddenly stopped, and the bleeders taken off the grants. Had circumstances been normal our prediction would certainly have been fulfilled. It was anticipated in balata circles at Paramaribo that the United States market would have taken the bulk of the production. Owing to the European ports being closed the prices quoted in New York were so ridiculously low that the exportation of all balata was naturally checked, and in consequence the markets of Dutch Guiana are overstocked with the product. We think American manufacturers would do well to try the Surinam product at this time; we are convinced good bargains are easily obtained, especially when ready cash is in such great demand in the colony.

The new regulation governing the industry passed its final reading in the local parliament, and is now law. It certainly is most unfortunate that just as these new laws came into force the European war should break out and the whole business be shelved for an indefinite period. There is no capital to invest in large tracts, and cessation is the order of the day on all balata undertakings.

Enterprising Americans can now buy all the balata they require, and pile it up against the advent of high prices. With a fair amount of ready cash on hand several hundred tons of sheet could be purchased at ridiculously low figures.

BRAZILIAN NOTES.

At a recent session of the Brazilian Chamber of Deputies, a credit of $100,000 was voted for the preliminary surveys connected with the Santa Catharina Railway. The sum of $450,000 was likewise approved for the removal of obstructions from the rivers Acaqui, Guapy and Guascimbola.

Brazilian imports for the first half of 1913 equaled $205,419,960, while those for the corresponding period of this year only represented $134,185,085.

Export statistics for the same period of the two years showed, respectively, the equivalents of $158,038,030 and $153,873,190.

The Brazilian press calls attention to the balance of international trade being in favor of Brazil, for the first six months of 1914.

Following up previous announcements, De Lagotellerie & Co. have given notice of the temporary closing of their Para office, as a result of the European complications. They request that all communications be addressed to Caixa Postal, 31a Manaos.

The British consul at Rio was lately advised by cable that his Government had sent three warships to the Gulf of Mexico for the protection of cotton and kerosene cargoes.

In consequence of changes in administration, twenty-two members of the staff of the Madeira-Mamoré Railway lately returned to the United States.

Brazilian statistics show the rubber exports for the first half of 1914 to have represented 66,225,308 paper milreis ($22,075,102), as compared with 99,977,497 milreis ($33,325,832) for the corresponding period of 1913.

A New Form of Testing Device for Rubber.

IN 1912 the French Society for Encouragement of the National Industry of France conferred on MM. C. Cheveneau and F. Heim a gold medal for the invention of a registering dynamometer for testing rubber samples.

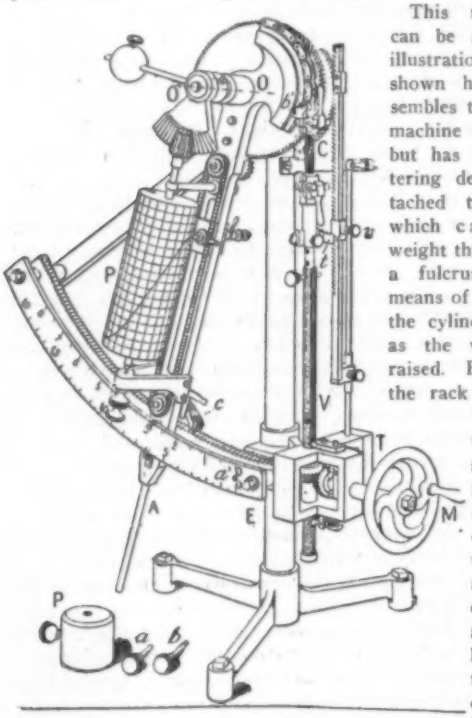


FIG. No. 1.

This machine, as can be seen by the illustration No. 1, shown herewith, resembles the Schopper machine very closely, but has a self-registering device, P, attached to the arm which carries the weight that swings on a fulcrum, O. By means of a gear at O' the cylinder revolves as the weight is raised. By means of the rack and pinion V, which revolves a smaller pinion connected with the chain beside the cylinder, and which chain carries a pencil, a line is registered on the cylinder. The height of the line represents the stretch, and the distance of revolution shows the weight or pull.

A great amount of complicated calculation has been given to show the correctness of the registration. This is characteristic of many continental scientists, who would rather make a complicated calculation than a simple trial which would give a calibration, allowing for the numerous errors of the calculation and compensating for any friction or weight of the cylinder or moving machinery.

At the International Rubber Congress held in London in 1911, MM. Cheveneau and Heim gave an elaborate set of tables of the tests made on this machine, but did not describe the machine. It has not hitherto been illustrated, though it appears to have merit. A criticism of the machine and of its system of operating has since appeared in France (Le Caoutchouc et la Gutta Percha; July 15, 1914; page 8430), in which exception is taken to the formulas and method of calculation. The anonymous author suggests that instead of the foregoing apparatus, one be used which is shown diagrammatically in figure No. 2.

Here it will be seen that the pendulum P swings on the center *o*, around which a cord extends to the sample *a* held between the nippers. Attached to the nippers or holders are two pulleys around which a cord is stretched attached to base at one end at *f*, passing over pulleys at top and around wheel on end of registering cylinder and finally ending in weight *g*. Now as the specimen stretches in the jaws it is evident that the weight *g* must rise to twice the extent of the stretching of the sample. The movement of the sample *a* caused by the swing of pendulum or weight P will not have any effect on the length of this cord which revolves the cylinder. Nor does the weight of *g* or friction of pulleys have any influence, as this pull is transferred to the weight *g* through the grips on the sample *a*.

The recording pen is moved by the bar *d*, connected with plate *c*, which follows out the extended end of pendulum at *b*, thus following the movements of the weight and recording it. The weight *e* pulls the pencil out through a rack and pinion on the bar *d* and the weight pulley. It appears that the pencil might be moved by simple attachment of cord from it to wheel on center *o*, or attached to ball *c* with the same effect. A simpler way would be to have the recording cylinder attached to center *o* and revolving with it. It would be easy to so rearrange the cord between *f* and *g* as to move the pencil instead of revolving the cylinder, which would, of course, revolve with the shifting of weight P.

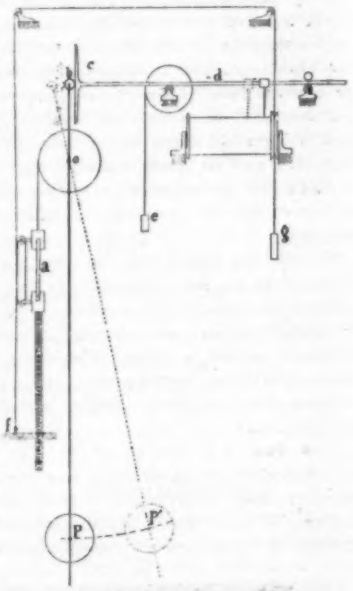


FIG. No. 2.

It is hoped that the above account of what has been done may stimulate those who have the standard non-recording machines of the same to attach a recording device such as an indicator card cylinder machine like those used on steam engines. Of course, rather than go into elaborate calculations, it is better to merely calibrate by attaching standard weights or a series of them in place of the sample *a* and noting the points at which definite weights move the machine and the indicator cylinder. Of course with this indicator or self-registering device hysteresis could be determined, as well as total strength, etc.

The fullest data relating to the machine and experiments with it may be found in the "Bulletin de la Société D'Encouragement pour l' Industrie Nationale" Paris; Vol. 120, 113th year, No. 1, p. 20, July, 1913.

AMERICAN RUBBER BOOTS FOR THE ALLIES.

Rubber boots of course come under the classification of contraband of war, but inasmuch as the ocean steamers plying between English and American ports are not likely under present conditions to be seriously disturbed, some American manufacturers of footwear have evidently thought it quite safe to ship rubber boots for the use of the allied armies. Fourteen hundred cases—about 17,000 pairs—of short boots were shipped from Boston on the "Scythian," sailing September 24, an additional shipment of 10,000 pairs being made on the "Arabic," sailing from the same port October 6, and a like shipment leaving the next day also from the same port on the "Bohemian." These shipments are probably only the beginning of a large order for army use in the great European combat.

Recent Patents Relating to Rubber.

UNITED STATES OF AMERICA.

ISSUED SEPTEMBER 1, 1914.

NO. 1,109,048. Apparatus for forming and vulcanizing rubber articles. M. A. Dees, St. Louis, Mo.

1,109,101. Pneumatic tire. H. R. Armstrong, Peoria, Ill.

1,109,130. Pneumatic sole for shoes. E. C. Kaye, Chicago, Ill.

1,109,140. Life saving garment. D. W. Ogilvie, Balboa, Canal Zone.

1,109,151. Puncture healing liquid for tires. J. Simoni, Keyport, N. J., assignor to H. Clarkson, Flushing, N. Y.

1,109,159. Vehicle tire. A. Ball, Canton, Ohio.

1,109,173. Demountable vehicle rim. C. A. Myers, assignor to The Firestone Tire & Rubber Co.—both of Akron, Ohio.

1,109,180. Pneumatic plug for heels. B. Rosenberg, New York, N. Y.

1,109,183. Ball. P. H. Schneider, Akron, Ohio.

1,109,198. Spring tire. H. B. Bryan, assignor of one-half to L. D. Hobbs —both of Johnson City, Ill.

1,109,231. Bloomers with elastic waist band. M. E. Killean, San Francisco, Cal.

1,109,249. Fountain pen filler. W. Rodiger, Chicago, Ill.

1,109,278. Tire protector. R. Bowen and W. F. Sweeney—both of Southwest, Pa.

1,109,307. Tire reinforcement. C. Seewald, Williamsport, Pa.

1,109,318. Surgical inhaler. A. W. Browne, Prince Bay, N. Y., and F. L. Wallace, Lansdowne, assignors to The S. S. White Dental Manufacturing Co., Philadelphia—both in Pennsylvania.

1,109,504. Swimming apparatus gown. N. L. Bernatzky, Petrograd, Russia.

1,109,529. Process for effecting the separation of materials. R. Jaffé, Frankfort-on-the-Main, Germany.

1,109,549. Spring wheel. C. Schevitz, Jacksonville, Fla.

Trade Marks.

70,753. Century Rubber Co., Plainfield, N. J. The word *Cre-Pa-Ra*. For pneumatic tires.

71,915. Puncture Cure Sales Co., Newark, N. J. The word *KorKer*. For puncture sealing compositions for pneumatic tires.

76,328. The Santo Rubber Co., Wilmington, Del. The word *Santo*. For rubber belting, hose, vehicle tires, inner tubes, packing, etc.

76,330. The Santo Rubber Co., Wilmington, Del. The word *Chief*. For rubber belting, vehicle tires, inner tubes, packing, etc.

77,275. Essex Rubber Co., Trenton, N. J. The word *Rodura*. For asbestos packing.

ISSUED SEPTEMBER 8, 1914.

1,109,757. Cushioned heel. T. J. Irwin, Trenton, N. J.

1,109,784. Pneumatic tire shield. J. P. Quill, Chicago, Ill.

1,109,816. Demountable tire rim. B. C. Ball and L. E. Younie—both of Portland, Ore.

1,109,819. Apparatus for treating fabrics. C. Buhl, assignor of one-half to S. D. McCausland—both of Paterson, N. J.

1,109,874. Supplementary cover or band for pneumatic tires. E. Scott, Wooler, England.

1,109,939. Inner tube for double tube pneumatic tires. W. M. Reason, Pontiac, Mich.

1,109,970. Pneumatic tire. A. A. Dennis, Grand Rapids, Mich.

1,109,972. Pneumatic tire. L. Dunn, assignor to Hercules Tire Co.—both of New Orleans, La.

1,109,973. Wheel tire. L. Duval, Newton, Mass.

1,109,977. Drying machine. W. R. Files, Providence, R. I.

1,109,995. Spring tire. J. Kravcak, Paterson, N. J.

1,110,107. Non-skidding device. J. Bropson, Cleveland, Ohio.

1,110,264. Detachable shoe heel. F. A. Isaacson, Madrid, Ia.

Designs.

46,359. Vehicle tire. G. W. Daum and G. W. Shiveley—both of Jeannette, Pa.

46,367. Rubber tire. J. S. McClurg, assignor to The Pharis Tire & Rubber Co.—both of Newark, Ohio.

Trade Marks.

55,964. J. W. Patterson, New York, N. Y. The word *Alibi* in white letters on a black background. For chewing gum.

57,679. F. Soennecken, Bonn, Germany. An illustration of a stub pen through the center of a writing tablet, with an eagle perched on the top. For penholders made of vulcanite.

75,193. A. K. Draper, Chicago, Ill. The word *No-Leak-O* in white letters on a black background. For a compound for making waterproof cotton and woolen fabrics or leather.

76,913. The Auto-Grav Manufacturing & Medical Co., Denver, Col. The word *Auto-Grav*. For syringes.

78,603. Clement Restein Co., Philadelphia, Pa. The word *Belmont*. For fiber and rubber packings.

78,895. The Toronto Rubber Co., Toronto, Ohio. The word *Ae-Onite*. For rubber tires, rubber packing, inner tubes, hose, belting, etc.

78,897. The Toronto Rubber Co., Toronto, Ohio. The word *Ae-Onite*. For rubber mats and matting.

79,389. H. G. Macwilliam, New Rochelle, N. Y. The word *President*. For suspenders.

ISSUED SEPTEMBER 15, 1914.

1,110,340. Machine for treating rubber. L. Norzagaray, assignor to The Economic Rubber Washing Machine Co., Ltd.—both of London, England.

1,110,353. Rubber soled shoe. C. B. Slater, Boston, Mass., assignor of one-half to Flexible Rubber Goods Co., Salisbury, Conn.

1,110,451. Pneumatic tire for vehicles. I. S. McGiehan, London, England.

1,110,538. Resilient tire. C. Fendeis, New York, N. Y.

1,110,541. Interchangeable block tire. E. R. Hewitt, Ringwood, N. J., assignor to Hewitt Motor Co., New York, N. Y.

1,110,614. Life saving appliance. S. P. Edmonds, Catonsville, Md.

1,110,624. Non-slipping low shoe. G. Guiffre, Capitol View, Md.

1,110,640. Pneumatic tire having a foundation fabric consisting of natural silk incorporated with india rubber. W. E. Muntz, London, England.

1,110,671. Manufacture of rubber hose. H. Z. Cobb, Winchester, Mass.

1,110,672. Resilient tire for vehicle wheels. G. Concato, Perth Amboy, assignor of three-twentieths to A. J. Ferretti, Cliffside; three-twentieths to A. J. Perrone, Palisades, and two-twentieths to C. H. Kayser, West Orange—all in New Jersey.

1,110,674. Catamenial appliance. J. B. Des Rosiers, Providence, R. I.

1,110,730. Resilient heel. J. G. Tufford, assignor of one-sixth to C. H. Ingwer, one-sixth to A. G. Smith, and one-twelfth to W. C. Smith—all of Elyria, Ohio.

1,110,750. Resilient tire for motor cars and other vehicles. H. Diamant, Middlesex, England.

1,110,800. Machine for inserting wires in the rim engaging portion of solid tires. C. Kuentzel, assignor to the Goodyear Tire & Rubber Co.—both of Akron, Ohio.

1,110,916. Auto tire saving device. C. J. Fisk and E. Lindblom—both of Bismarck, N. D.

1,110,956. Artificial bait. W. F. McBride, Warsaw, Ind.

1,110,959. Bath tub silencer. G. A. Niewiardowski, Cleveland, Ohio.

Designs.

46,408. Bathing cap. J. A. Murray, assignor to The Seamless Rubber Co.—both of New Haven, Conn.

46,409. Bathing cap. J. A. Murray, assignor to The Seamless Rubber Co.—both of New Haven, Conn.

46,410. Bathing cap. J. A. Murray, assignor to The Seamless Rubber Co.—both of New Haven, Conn.

Trade Mark.

78,876. The Master Car Builders' Association, Chicago, Ill. The initials *MCB*. For rubber hose.

ISSUED SEPTEMBER 22, 1914.

1,111,010. Life preserver. J. Depta, Passaic, N. J.

1,111,094. Bath tub appliance comprising a pneumatic cushion. F. C. Rehm, assignor of one-half to C. Nelson—both of Detroit, Mich.

1,111,095. Tire protector. A. Riemann, New York, N. Y.

1,111,145. Vehicle wheel. E. J. Fillingim, Pace, Fla.

1,111,149. Penholder for multicolor writing. L. B. Halverson, Flandreau, S. D.

1,111,170. Skiving machine. E. Nall and W. C. Tyler, assignors to The Goodyear Tire & Rubber Co.—all of Akron, Ohio.

1,111,171. Resilient vehicle tire. W. M. Nevotti, Omaha, Neb.

1,111,188. Overshoe. J. T. Simpson, Chicago, Ill.

1,111,204. Spring wheel. A. W. Youngkvist, assignor to Easy Auto Wheel Co.—both of Duluth, Minn.

1,111,232. Method of and machine for folding the edges of rubbber sheets. J. E. Perrault, Belmont, assignor to Hood Rubber Co., Watertown—both in Massachusetts.

1,111,317. Shoe last with cavity having filling of resilient material. J. Pacelli, New York, N. Y.

1,111,404. Protector for tires. C. A. Pettie, New York, N. Y.

1,111,418. Manufacture of vehicle tires. F. L. O. Wadsworth, Sewickley, Pa.

1,111,419. Construction of vehicle tires. F. L. O. Wadsworth, Sewickley, Pa.

1,111,423. Demountable rim for vehicle wheels. J. L. Webster, Chicago, Ill.

1,111,436. Shoe sole vulcanizing and applying apparatus. G. F. Butterfield, assignor to G. I. Butterfield—both of Cambridge, Mass.

1,111,437. Composite boot and shoe. G. F. Butterfield, assignor to G. I. Butterfield—both of West Newton, Mass.

1,111,519. Fountain pen. F. M. Ashley, New York, N. Y.

1,111,642. Toy balloon. F. F. Brucker, assignor to The Miller Rubber Co. —both of Akron, Ohio.

1,111,643. Rubber backed brush for applying polish. L. W. Bullard, Cumberland, Md.

Designs.

46,428. Vehicle tire. J. Christy, Akron, Ohio.

46,439. Vehicle tire. R. J. Marshall, assignor to The Morgan and Marshall Rubber & Tire Co.—both of East Liverpool, Ohio.

46,447. Pneumatic tire. T. R. Palmer, Erie, Pa.

Trade Marks.

70,252. Resistal Process Co., Chicago, Ill. The word *Resistal*. For waterproof fabrics, waterproof sheeting, etc.

78,928. H. W. Johns-Manville Co., New York, N. Y. The initials *J-M*. For rubber belting, hose, etc.

79,854. Paxton & Gallagher Co., Omaha, Neb. The word *Monitor*. For automobile tires, inner tubes, boots, etc.

ISSUED SEPTEMBER 29, 1914.

1,111,802. Method of forming patches for rubber articles. J. G. Moomy, Erie, Pa.

1,111,803. Method of forming patches for rubber articles. J. G. Moomy, Erie, Pa.

1,111,804. Patch for rubber articles, and process of manufacture. J. G. Moomy, Erie, Pa.

1,111,863. Spring wheel. F. M. Ross and H. G. Horstman, assignors of one-fourth to W. W. Baxter and one-fourth to T. Horstman—all of Cincinnati, Ohio.

1,111,883. Spring wheel. J. S. Culp, Elkhart, Ind.

1,112,030. Armor for pneumatic tires. R. C. Purvis, Seaford, Del.

1,112,107. Clysterizing apparatus. A. G. Anderson, Chicago, Ill.

1,112,114. Exercising apparatus. R. J. R. Caines, Boston, Mass.

1,112,116. Resilient wheel. A. Cane, Oakland, Cal.

1,112,162. Sanitary catamenial garment. J. G. Rovira, New York, N. Y.

1,112,168. Surgical irrigating apparatus. L. J. Stilling, Newark, N. J.

1,112,201. Shoulder support for personal wear comprising inflatable bulbous elastic cushions. F. W. Ersfeld, New York, N. Y.

1,112,248. Woman's reversible and adjustable house dress having a belt comprising telescoped elastic and inelastic portions. W. C. P. Baldwin, Holyoke, Mass.

1,112,285. Spring wheel. H. S. Gover, Bel Air, Md.

1,112,309. Spring wheel. O. F. Miller, New Milford, Pa.

1,112,326. Clicking machine. C. H. Roper, Belmont, assignor to Hood Rubber Co., Watertown—both in Massachusetts.

1,112,353. Tire protector. V. L. Bowman, Oakland, Cal.

1,112,362. Fountain pen feed bar. D. C. Demarest, Passaic, N. J.

Design.

46,481. Tire casing. T. R. McKenna, East Palestine, Ohio.

Trade Mark.

77,680. I. B. Kleinert Rubber Co., New York, N. Y. The word *Tango*. For dress shields.

[NOTE.—Printed copies of specifications of United States patents may be obtained from THE INDIA RUBBER WORLD office at 10 cents each, postpaid.]

GREAT BRITAIN AND IRELAND.

PATENT SPECIFICATIONS PUBLISHED.

The number given is that assigned to the Patent at the filing of the application, which in the case of these listed below was in 1913.

**Denotes Patents for American Inventions.*

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, SEPTEMBER 2, 1914.]

10,802 (1913). Vehicle wheel rim. C. J. Walker, Blacktan Tannery, St. James Road, Northampton.

10,893 (1913). Detachable rim attachments to wheels. W. D. D. Jones, 18, College street, Lambeth, London.

10,994 (1913). Fastening for wearing apparel. K. Cosman, 17, Kluserstrasse, Elberfeld, Germany.

11,020 (1913). Floor or stair tread consisting of a rubber or similar upper part secured to a sheet metal foundation. C. L. Cuthbe, 37, Great Eastern street, London.

*11,066 (1913). India rubber patches. J. G. Moomy, 323 East Eleventh street, Erie, Pa., U. S. A.

11,087 (1913). Spring wheel. J. A. Roch and S. A. Girouard, Seminary of Joliette, Quebec, Canada.

*11,089 (1913). Spring wheel with continuous elastic tire. O. H. Hinds, 1101 Franklin street, Le Mars, Ia., U. S. A.

*11,101 (1913). Corset having elastic inserts. D. Kops, 435 Riverside Drive, New York, N. Y., U. S. A.

11,175 (1913). Cementing india rubber. A. Pidoux, 99, Boulevard Carl Vogt, Geneva, and P. de Carsaladl, 77, Rue Defacqz, Brussels.

11,209 (1913). Artificial caoutchouc. P. A. Newton, 6, Breams Buildings, Chancery Lane, London.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, SEPTEMBER 9, 1914.]

11,257 (1913). Vulcanizing india rubber. F. E. Blaisdell, 4, West Kensington Mansions, West Kensington, London.

11,316 (1913). Pneumatic wheel tire. D. K. C. Russell, 21, Leamington Terrace, Edinburgh.

*11,367 (1913). Instrument for arresting hemorrhage of the nose. T. T. Sandmark, Alger, Wash., U. S. A.

11,419 (1913). Tire comprising one or more rings of Spanish cane seated on a rubber bed. F. Zöttl and J. Zöttl, Ohu, Post Altheim, Niederbayern, Germany.

11,424 (1913). Apparatus in which rubber latex is coagulated on a moving band by smoke. J. S. Cardwell-Quinn, Bello-Horizonte, Minas Geraes, Brazil.

11,476 (1913). Tire attachment to rims. F. Humphris, 31, Knight's Park, Kingston, Surrey.

11,481 (1913). Spring wheel with continuous outer rigid ring and rubber ring and like cushions. W. S. Boult, 45, Myddelton Square, London.

11,485 (1913). Tire attachment to rim. C. T. B. Sangster, Dale Road, Bournbrook, Birmingham.

11,530 (1913). Vulcanizing rubber. Farbenfabriken vorm. F. Bayer & Co., Leverkusen, near Cologne, Germany.

*11,595 (1913). Pressure gage for pneumatic tires, etc. J. B. Polo, Clear Lake, S. D., U. S. A.

11,615 (1913). Vulcanizing india rubber. Farbenfabriken vorm. F. Bayer & Co., Leverkusen, near Cologne, Germany.

11,624 (1913). Cushion. B. G. Cope, Bradford House, Bloxwich, Staffordshire.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, SEPTEMBER 16, 1914.]

*11,639 (1913). Life buoy. J. J. Puskanen, Chisholm, Minn., U. S. A.

11,641 (1913). Rubber and leather insoles and soles. Soc. Francaise du Cuir Armé, 118, Rue de Vaugirard, Paris.

11,655 (1913). Spring wheel. B. B. Roberts, Park House, Cimla, and J. Walters, Maesgwyn, Gnoll Park Road—both in Neath, Glamorganshire.

*11,667 (1913). Spring wheel. S. P. Neuhausen, 3934 North Francisco avenue, Chicago, Ill., U. S. A.

11,717 (1913). Coating metals. J. Tronel, 6, Leipzigerstrasse, Berlin.

11,731 (1913). Machine for making tire fabric. J. W. H. Dew, 8, Laurence Pountney Hill, Cannon street, London.

11,767 (1913). Elastic webbing. W. J. Taylor, "Wimmera Lodge," Salisbury Road, Walthamstow, and W. Williams & Son, 53, Bread street—both in London.

11,832 (1913). Jar closure comprising a rubber ring. A. Dunhill, 31, Duke street, St. James's, London.

11,879 (1913). Raising sunken submarines by inflated balloons. L. Pouty, 30, Rue du Bois Joli, and A. Viau, 119, Rue des Hauts Paves—both in Nantes, France.

*11,964 (1913). Eraser. M. F. Hayes, 152 East Forty-eighth street, New York, N. Y., U. S. A.

11,977 (1913). Tapping rubber trees, etc. E. L. Walker, Hewagam Estate, Padukka, Ceylon.

12,012 (1913). Wheel tire. E. E. Rouse, 37, Queen Victoria street, London.

12,062 (1913). Cap cover made of waterproof material. I. Berks, 142, Bevois street, St. Mary street, Southampton.

*12,086 (1913). Spring wheel with rubber tire. H. Kirby, 163 Main street, Middletown, Conn., U. S. A.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, SEPTEMBER 23, 1914.]

12,209 (1913). Dust shields for corners. H. W. Ellis, 267, Coventry Road, Ilford, London.

*12,229 (1913). Vehicle wheel. J. A. Glenn, 80 Howard street, Albany, N. Y., U. S. A.

12,242 (1913). Non-skid device for twin tires. C. A. Boevey, 8, Church Circle, South Farnborough, Hampshire.

12,248 (1913). Spring wheel with pneumatic cushion. H. A. B. Anthony, "Glenthorne," Thame, Oxfordshire.

*12,256 (1913). Röntgen ray apparatus comprising a rubber cap. H. C. Snook, 119 Bryn Mawr avenue, Cynwyd, Pa., U. S. A.

12,294 (1913). Vent peg comprising a rubber sleeve. J. J. Abbin, 27, Patrick street, Mountmellick, Queen's Co.

*12,317 (1913). Detachable rim attachment to wheel. W. J. Lane, 16 Tacoma avenue, Youngstown, Ohio, U. S. A.

*12,345 (1913). Wheel tire. R. Rowley, 170 Broadway, New York, N. Y., and J. J. Coomber, 326 Old Bergen Road, Jersey City, N. J.—both in U. S. A.

12,358 (1913). Spring wheel. G. H. Robinson, 144, Queen's Road, Bayswater, London.

*12,373 (1913). Tread surfaces for pneumatic tire. M. C. Overman, 391 West End avenue, New York, N. Y., U. S. A.

12,378 (1913). Golf ball cleaner. L. H. Bennett and C. H. Bennett, "Trimpley," Old Warwick Road, Olton, Warwickshire.

12,446 (1913). Tread projection for wheel tires. W. E. Muntz, 89, Pall Mall, London.

12,501 (1913). Wheel tire. F. W. Farr, 30, Bridge street, Northampton.

12,509 (1913). Vehicle wheel. R. T. Smith, 111, Lovely Lane, Warrington, Lancashire.

12,515 (1913). Waterproof fabrics in ornamental effects. L. Frankenstein, Victoria Rubber Works, Newton Heath, Manchester.

12,528 (1913). Valve for pneumatic tire. L. Lefrère, 217, Venloerstrasse, Ehrenfeld, Cologne, Germany.

12,650 (1913). Tire consisting of non-inflated rubber cells in a state of compression. G. Singer, Litchard, Bridgend, Glamorganshire.

12,705 (1913). Inflating valves for footballs, air beds, cushions, pneumatic tyres, etc., comprising a flattened elastic tube. A. Good, 63, Grove Road, Walthamstow, London.

12,777 (1913). Vulcanizing india rubber. P. A. Newton, 6, Breams Buildings, Chancery Lane, London.

12,803 (1913). Belt fastener comprising pads of rubber. R. L. Blanc, La Valette, Maison Michaud, St. Etienne, France.

12,815 (1913). Synthetic caoutchouc products. J. Y. Johnson, 47, Lincoln's Inn Fields, London.

12,816 (1913). Synthetic caoutchouc products. J. Y. Johnson, 47, Lincoln's Inn Fields, London.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, SEPTEMBER 30, 1914.]

*12,904 (1913). Plastic compositions consisting essentially of rubber and vulcanizable fibres, for making hoofpads. F. W. Kremer, Carlstadt, N. J., U. S. A.

12,957 (1913). Means for keying india rubber or other paving blocks to a concrete or like foundation. A. J. J. Pfeiffer, 3, St. Helen's Place, London.

12,980 (1913). Synthetic caoutchouc substances. J. Y. Johnson, 47, Lincoln's Inn Fields, London.

13,207 (1913). Connecting uppers to insoles and soles. J. R. Sproat, 4, Rickirgate, Carlisle.

*13,254 (1913). Detachable rim. H. Mote, 401 Wayne County Bank Buildings, Detroit, Mich., U. S. A.

13,328 (1913). Churn cover comprising a rubber washer. S. Cheeld, Waterside Iron Works, Chesham, Buckinghamshire.

13,338 (1913). Driving belt having friction blocks of rubber surrounded by metal frames. C. F. Reuforth, 21, Sophienstrasse, Berlin.

13,385 (1913). Tread band for wheel tire. F. W. Farr, 30, Bridge street, Northampton.

13,399 (1913). Wheel tire tread band. E. Scott, Cycle Works Market Place, Wooler, Northumberland.

13,430 (1913). Waterproof apron for protecting passengers and seats of vehicles. B. S. Kennell, 31, Chester Buildings, Lomond Grove, Camberwell, and C. H. Workman, 60, Aberdare Gardens, South Hampstead—both in London.

13,438 (1913). Treating latex. S. C. Davidson, Sirocco Engineering Works, Belfast.

13,444 (1913). Floats of gas tight fabric impregnated with rubber, for raising sunken ships. L. Vincina, 8, Via Gaspara Stampa, Trieste, Austria.

13,453 (1913). Molding rubber articles. J. T. Brierley, "Highfield," and Leyland & Birmingham Rubber Co., Golden Hill Works —both in Leyland, Lancashire.

NEW ZEALAND.

[ABSTRACTED IN THE PATENT OFFICE JOURNAL, JULY 30, 1914.]

34,849 (1913). Resilient wheel with pneumatic rotating cushions. R. T. P. Patent Wheels Proprietary, Ltd., of Tuckett Chambers, 359 Collins street, Melbourne, Victoria.

THE FRENCH REPUBLIC.

PATENTS ISSUED (With Dates of Application).

469,415 (March 9, 1914). Rubber heel for footwear. A. Guiénais.

469,498 (March 11). Press for joining the soles to footwear by the help of an agglutinant. Continental Caoutchouc & Gutta Percha Co.

469,536 (March 2). Mudguard for automobiles and other vehicles. E. Emery.

469,781 (May 28, 1913). Elastic cover for wheels of automobiles and other vehicles. G. G. Chapelet.

469,933 (March 21, 1914). Process for making air chambers for pneumatic tires. R. T. Henderson.

470,019 (June 5, 1913). Non-pneumatic elastic tire for vehicle wheels. E. G. Ort.

470,025 (June 5). Improvements in tire rims, applicable to wheels of vehicles in use. J. F. Gommeret.

470,059 (March 25, 1914). System of tires for cycles. M. Rognon.

470,065 (March 26). Protection for pneumatic tires. Herkules Pneumatik-Werke, G. m. b. H.

470,098 (June 6, 1913). Process insuring the protection and resistance of natural or artificial rubber, pure or mixed, and of similar products. Madame Vve. Marquerie.

470,107 (January 12, 1914). Elastic wheel for automobiles and other vehicles. M. S. de Carmona.

470,123 (March 16). Process of manufacture of all kinds of rubber tires. H. Wippel and The Reform Pneumatic Tire Co.

470,135 (March 26). Pneumatic tire in three parts. C. Herrmann.

470,192 (March 28). Machine for cutting rubber tires. A. Greenwell and Mdlle. Rimbold.

470,198 (March 28). Armed pneumatic covers for vehicle wheels. A. Bourreau.

470,067 (March 26). Improvements in elastic ribbon. Madame M. Muth.

470,319 (June 12, 1913). Vehicle wheel with elastic tire. H. Leblond.

470,362 (March 28, 1914). Improvement in non-bursting pneumatic tires. F. Newbauer and E. Feldmann.

470,372 (April 1). New rubber substitute for waterproofing and similar operations, and process for its manufacture. G. d'Almeida.

470,311 (March 31). Process of preparing blocks for hollow printing, by using sensitive layers of rubber and similar substances for the one part, and bitumen and like substances for the other part. J. Rieder.

470,446 (April 2). Mudguard tire particularly intended for wheels of heavy weight vehicles. A. Lüdert.

[NOTE.—Printed copies of specifications of French patents can be obtained from R. Bobet, Ingenieur-Conseil, 16 avenue de Villiers, Paris, at 50 cents each, postpaid.]

THE GERMAN EMPIRE.

PATENTS ISSUED (with Dates of Validity).

278,351, Class 47f (September 24, 1913). Appliance for attaching repair patches to the inner walls of hose. Leopold Piehl, Trebnitz, Silesia.

278,430, Class 30d (January 3, 1914). Bandage for ruptures. Heinrich Carroll, Bandgen Fabrik, Lahr, Baden.

278,564, Class 63c (June 1, 1913). Solid tires with air chambers for motor truck wheels. Ch. Schragin, Berlin-Panko.

278,619, Class 30g (September 21, 1913). Nursing bottle. Wilhelm Dettmar and Jean Breuer, Cologne.

278,688, Class 47f (February 23, 1913). Vacuum coupling for compressed air brakes. Gottlieb Ackermann, Esslingen.

278,874, Class 39b (April 14, 1912). Improvement of insufficiently polymerized rubber material. The B. F. Goodrich Co., New York.

278,915, Class 47f (December 5, 1913). Soft stuffing box packing. A. Cahen, Leudersdorff & Co., Mülheim-a-Rh.

INDIA RUBBER GOODS IN COMMERCE.

EXPORTS FROM THE UNITED STATES.

OFFICIAL statement of values of exports of manufactures of india rubber and gutta percha for the months of July and August, 1914, and for the first eight months of five calendar years:

MONTHS.	Belting, Packing and Hose.	Boots and Shoes.	All Other Rubber.	TOTAL.
July, 1914	$188,774	$103,862	$686,645	$979,281
August, 1914	128,958	42,941	343,073	514,972
January-June	1,118,298	415,672	3,680,007	5,213,977
Eight months, 1914.	$1,436,030	$562,475	$4,709,725	$6,708,230
Eight months, 1913.	1,680,443	856,050	5,865,815	8,402,308
Eight months, 1912.	1,650,887	850,879	5,356,274	7,858,040
Eight months, 1911.	1,482,052	1,175,597	4,815,708	7,473,357
Eight months, 1910.	1,431,382	1,347,749	3,798,848	6,577,979

The above heading, "All Other Rubber," for the months of July and August, 1914, and for the first eight months of three calendar years, includes the following details relating to tires:

MONTHS.	For Automobiles.	All Other.	TOTAL.
July, 1914	$341,617	$36,279	$377,896
August, 1914	188,002	33,063	221,065
January-June	1,760,475	259,873	2,020,348
Eight months, 1914	$2,290,094	$329,215	$2,619,309
Eight months, 1913	2,922,200	387,515	3,309,715
Eight months, 1912	2,240,826	393,441	2,634,267

STATEMENT OF THE INDIA RUBBER WORLD.

Statement of the ownership, management, circulation, etc., required by the Act of August 24, 1912, of THE INDIA RUBBER WORLD, published monthly at New York, N. Y., for October 1, 1914.

Editor, Henry C. Pearson, Tompkins Corners, Putnam Co., New York.

Managing Editor, John P. Lyons, 201 West 105th street, New York.

Business manager, Henry C. Pearson, Tompkins Corners, Putnam Co., New York.

Publishers, The India Rubber Publishing Co., 25 West Forty-fifth street, New York.

Owner, Henry C. Pearson, Tompkins Corners, Putnam Co., New York.

Known bondholders, mortgagees, and other security holders, holding 1 per cent. or more of total amount of bonds, mortgages, or other securities: None.

(Signed) JOHN P. LYONS, Managing Editor.

Sworn to and subscribed before me this first day of October, 1914.

(Signed) HELEN HEROLD, Notary Public,
[Seal] New York County No. 1723.

New York County register No. 5202. Certificate filed in Kings County Register's office No. 6679. (Term expires March 30, 1915.)

BALLOONS IN WARFARE.

The first balloon used in warfare was that which, on September 23, 1870, ascended from Paris, piloted by the aeronaut Durouf, with 250 pounds of letters, and after three hours' flight descended at Evreux, beyond the lines of the besieging Prussians. Sixty-five balloons, each costing about $1,000, were similarly despatched from Paris during that siege, carrying from 200 to 1,000 pounds of letters each. All such letters were written on very thin paper, the reverse side having printed on it news of the besieged city.

Review of the Crude Rubber Market.

New York, October 30, 1914.

THE principal feature of the New York hard fine Pará market during the month of October was its relative steadiness. On September 30 it stood at 65/66 cents; rising on October 1 to 66/67 cents and dropping again on the 7th to 64/65 cents. It remained at this price till the 21st, when it rose to 66 cents, at which point it stood on the 30th.

Firmness marked the early days of the month, but manufacturers showed no disposition to anticipate supplies to an important extent. A good demand from tire making concerns was, however, noted from the West. One important concern was reported to be operating to 80 per cent. of its capacity.

Towards the middle of the month the improved export trade in rubber goods and other demands had reacted beneficially on the tone of the rubber market, price-cutting having almost entirely disappeared. Some of the leading grades of Pará rubber sold at an advance of 1 cent on the price of a week earlier. The closing week of the month displayed increased firmness.

Plantation rubber likewise remained steady during the greater part of the month, on the basis of 58/60 cents for pale crepe; advancing on the 22nd to 61 cents, at which it stood on the 30th.

Arrivals of plantation rubber were extensive, but were understood to be largely in execution of contracts.

The latest advices from London report a firm market at recent quotations, there being no pressure to sell. London imports for the month of September included 3,523 tons plantation, while deliveries represented 3,452 tons. Stocks of plantation aggregated 3,303 tons on September 30, 1913, and 3,595 tons on the same date this year. Deliveries were thus nearly keeping pace with imports, receipts having been fairly well disposed of.

Owing to the accumulation in London of brown, specky and dark qualities of plantation, low prices have been current there for these grades.

An estimate quoted by Consul General L. Drier, of Singapore, places the aggregate output of the Straits Settlements and the Federated Malay States for 1914 as about 69,326,269 pounds, the total for the first 6 months of this year being 34,510,939 pounds. There is no longer fear of a shortage, two steamers having alone brought between them 2,100 tons to London. Stocks are reported to be steadily diminishing. According to the most recent advices, no date has been fixed for the resumption of auctions.

By latest reports, large quantities of rubber are being shipped from New York by the principal dealers. The quantity for October has been estimated as 200 to 300 tons for Norway, Sweden, Denmark, Holland and Italy. Though it has been supposed that some of this rubber may have been ultimately intended for Germany, it is generally believed that the bulk of it is meant for consumption in the countries to which it is shipped.

The Norwegian manufacturing industry is obliged to undertake the manufacture of boots and shoes for the home trade, seeing that the supply from Russia is cut off. On account of this development the purchases of crude rubber by Norwegian manufacturers are unprecedentedly large.

The strength of the New York market for plantation rubber has been partially attributed to sinking of the steamer "Troilus" in the Indian Ocean, with 1,200 tons of crude rubber, by a German cruiser, and other losses from the same cause.

Crop returns for nine months, to end of September, as cabled, included the following:

		1913,	1914,
Anglo Malay	*Pounds*	974,375	1,016,571
Pataling		366,111	418,706
London Asiatic		722,394	794,295
Golden Hope		129,658	116,530
Selaba		304,399	391,222
Rubber Estates of Johore		200,159	378,275

Production by the larger plantations is evidently being kept up.

The Antwerp rubber market has been transferred to London, and the additional supplies have materially contributed to supplying needs. A strong demand has been noticeable from Russia.

Satisfaction has been expressed at the manner in which the English market has so far surmounted the difficulties anticipated at the opening of hostilities. Receipts are fully up to expectations. Importers are therefore obliged to meet the market.

NEW YORK QUOTATIONS.

Following are the quotations at New York one year ago, one month ago, and October 30, the current date:

PARA.	Nov. 1, '13.	Oct. 1, '14.	Oct. 30, '14.
Islands, fine, new	66@67	48@50	50@52
Islands, fine, old	.....	50@52	52@53
Upriver, fine, new	73@74	63@65	65@66
Upriver, fine, old	76@80	66@68	67@69
Islands, coarse, new	28@29	26@28	27@28
Upriver, coarse, new	46@47	44@45	47@48
Upriver, coarse, old	.....	.....	.....
Cameta	36@37	28@29	30@31
Caucho, upper	43@44	44@45	46@47
Caucho, lower	.....	41@43	41@43
PLANTATION CEYLON.			
Fine smoked sheet	59@60	63@64	65@66
Fine pale crepe { near-by	53@54	61@62	61@63
Fine pale crepe { forward		59@60	60@61
Fine sheets and biscuits unsmoked	51@52	59@60	60@61
CENTRALS.			
Corinto	.....	40@42	45@46½
Esmeralda, sausage	40@41	40@41	44@45
Guayaquil, strip	.....	.....	.....
Nicaragua, scrap	37@39	40@41	44@45
Panama	.....	.....	.....
Mexican plantation, sheet	.....	35@45	37@39
Mexican, scrap	37@38	39@41	40@42
Mexican, slab	.....	.....	.....
Mangabeira, sheet	.....	.....	40@42
Guayule	.....	45@50	.....
Balata, sheet	63@64	54@56	51@52
Balata, block	44@45	43@47	43@44

AFRICAN.			
Lopori, ball, prime	47@48	.....	52@55
Lopori, strip, prime	.....	.....	.....
Aruwimi	37@38	.....	.....
Upper Congo, ball red	45@46	.....	.....
Ikelemba	.....	.....	.....
Sierra Leone, 1st quality.	45@46	.....	.....
Massai, red	.....	.....	54@58
Soudan Niggers	.....	.....	.....
Cameroon, ball	33@40	42@44	44@45
Benguela	.....	.....	31@33
Madagascar, pinky	.....	.....	.....
Accra, flake	20@22	.....	25@26
EAST INDIAN.			
Assam	.....	52@58	54@58
Pontianak	6@6¼	8@ 9	8@ 9
Borneo, II, or 2nd	.....	.....	...35

Plantation Rubber from the Far East.

EXPORTS OF CEYLON GROWN RUBBER.

(From January 1, to September 14, 1913 and 1914. Compiled by the Ceylon Chamber of Commerce.)

To—	1913.	1914.
Great Britain ..... *pounds*	8,809,508	11,947,217
United States	4,352,644	5,886,037
Belgium	2,478,057	2,969,369
Australia	367,309	482,674
Germany	176,626	1,037,417
Japan	170,889	215,100
Straits Settlements	48,343	42,535
Italy	38,828	1,772
Austria	29,335	.....
France	4,482	259,672
Holland	992	.....
India	881	1,050
Russia	.....	105,212
Total	16,477,894	22,948,053

(Same period 1912—8,240,392; same period, 1911—3,686,862.)

The export figures of rubber given in the above table include the imports re-exported. (These amount to 2,711,816 pounds—2,174,979 pounds from the Straits, and 525,213 pounds from India.) To arrive at the approximate quantity of Ceylon rubber exported to date, deduct the quantity of imports shown in the import table from the total exports.

TOTAL EXPORTS FROM MALAYA.

(From January 1 to dates named. Reported by Barlow & Co., Singapore. These figures include the production of the Federated Malay States, but not of Ceylon.)

To—	Singapore.	Malacca, August 21.	Penang, July 31.	Port Swettenham, August 31.	Total.
Great Britain..*pounds*	14,481,972	3,197,708	10,615,867	15,845,161	44,140,700
Continent	1,857,990	36,873	495,466	1,801,598	4,191,927
Japan	713,604	.....	.....	.....	713,604
Ceylon	286,494	.....	664,933	1,007,374	1,958,801
United States	8,023,602	.....	595,333	136,590	8,755,525
Australia	56,457	.....	.....	.....	56,457
Total	*25,420,119	3,234,581	12,371,599	18,790,723	59,817,022
Same period, 1913.	16,353,430	.....	8,222,533	18,716,169	43,292,132
Same period, 1912.	8,596,675	.....	4,798,834	12,353,409	25,748,918
Same period, 1911.	3,876,856	.....	2,577,465	6,795,266	13,249,587

*Corrected to July 31.

New York.

In regard to the financial situation, Albert B. Beers (broker in crude rubber and commercial paper, No. 68 William street, New York) advises as follows: "The first half of October the market for commercial paper remained about the same as during August and September, the demand being very light and rates ruling anywhere from 7½@9 per cent. for various rubber names, but the latter part of the month the situation improved considerably and the demand for paper increased, and some of the best names went as low as 6@6½ per cent., and those not so well known 7@7½ per cent."

NEW YORK PRICES FOR SEPTEMBER (NEW RUBBER)

	1914.	1913.	1912.
Upriver, fine	$0.64@0.78	$0.80@0.90	$1.10@1.22
Upriver, coarse	.43@ .55	.48@ .52	.87@ .95
Islands, fine	.53@ .70	.71@ .77	1.07@1.13
Islands, coarse	.27@ .35	.28@ .31	.55@ .59
Cametá	.29@ .36	.36@ .39	.61@ .67

IMPORTS FROM PARA AT NEW YORK.

[The Figures Indicate Weight in Pounds.]

SEPTEMBER 28.—By the steamer *Stephen* from Pará and Manáos.

	Fine.	Medium.	Coarse.	Caucho.	Total.
Arnold & Zeiss	241,400	28,900	140,600	207,200=	618,100
Meyer & Brown	160,900	15,000	159,200	78,500=	413,600
General Rubber Co	81,300	19,100	6,900	.....=	107,300
Henderson & Korn	227,000	75,500	23,800	46,000=	372,300
H. A. Astlett & Co	27,400	18,300	22,300	.....=	68,000
Robinson & Co	8,700	.....	21,800	.....=	30,500
Aldens' Successors, Ltd	89,000	8,700	18,000	.....=	115,700
G. Amsinck & Co	25,300	.....	700	3,600=	29,600
Crossman & Sielcken	2,500	.....	4,600	.....=	7,100
W. R. Grace & Co	400	.....	.....	600=	1,000
Total	863,900	165,500	397,900	335,900=	1,763,200

OCTOBER 9.—By the *Dunstan*, from Pará.

Arnold & Zeiss	48,600	5,000	.....	20,000=	73,600
Meyer & Brown	38,200	4,300	54,100	38,800=	135,400
General Rubber Co	9,100	1,400	300	700=	11,500
Henderson & Korn	30,800	18,400	9,900	1,600=	60,700
H. A. Astlett & Co	.....	.....	2,600	.....=	2,600
Johnstone, Whitworth & Co	31,800	.....	.....	.....=	31,800
W. R. Grace & Co	21,900	.....	.....	.....=	21,900
G. Amsinck & Co	2,300	.....	.....	.....=	2,300
Total	182,700	29,100	66,900	61,100=	339,800

OCTOBER 10.—By the *Minas Geraes*, from Pará.

Arnold & Zeiss	38,100	.....	97,000	9,200=	144,300
Meyer & Brown	4,600	1,100	8,400	.....=	14,100
Aldens' Successors, Ltd	17,000	1,000	27,000	2,000=	47,000
Henderson & Korn	27,700	5,000	17,200	.....=	49,900
Johnstone, Whitworth & Co	18,600	.....	.....	.....=	18,600
H. A. Astlett & Co	16,100	2,500	20,000	19,700=	58,300
G. Amsinck & Co	.....	.....	.....	3,100=	3,100
Total	122,100	9,600	169,600	34,000=	335,300

OCTOBER 16.—By the *Boniface*, from Pará and Manáos.

Arnold & Zeiss	192,400	4,500	81,600	62,600=	341,100
Henderson & Korn	170,200	39,200	59,200	30,900=	299,500
General Rubber Co	202,100	45,800	27,400	900=	276,200
Meyer & Brown	155,400	23,200	49,700	5,700=	234,000
Robinson & Co	141,800	.....	15,100	300=	157,200
H. A. Astlett & Co	43,500	5,700	15,600	15,600=	80,400
Aldens' Successors, Ltd	32,000	6,000	30,000	14,000=	82,000
Hagemeyer & Brunn	66,500	5,400	.....	.....=	71,900
G. Amsinck & Co	38,300	3,700	14,500	1,200=	57,700
Johnstone, Whitworth & Co	45,400	.....	.....	.....=	45,400
Robert Badenhop	16,900	.....	.....	.....=	16,900
Total	1,099,500	135,500	273,100	131,200=	1,662,300

PARA RUBBER VIA EUROPE.

POUNDS.

SEPTEMBER 25.—By the *Adriatic*=Liverpool:
Thompson & Co. (Fine) 4,500

SEPTEMBER 28.—By the *Philadelphia*=Liverpool:
Johnstone, Whitworth & Co (Fine) 9,000

OCTOBER 9.—By the *Celtic*=Liverpool:
Johnstone, Whitworth & Co. (Fine) 2,200
Johnstone, Whitworth & Co. (Coarse) 2,200 4,400

CENTRALS.

[*This sign, in connection with imports of Centrals, denotes Guayule rubber.]

SEPTEMBER 21.—By the *Mexico*=Mexico:

American Trading Co	2,500	
Carr Bros.	1,000	3,500

SEPTEMBER 21.—By the *Alliance*=Colon:

G. Amsinck & Co	5,100	
Pablo Calvet & Co	3,900	
A. M. Capen's Sons	1,900	
Mecke & Co	1,500	
J. S. Sembrada & Co	700	
Camacho, Roldan & Van Sickel	4,300	
Piza Nephews & Co	2,000	
Harburger & Stack	500	
J. Frank Dunbar	2,400	
Wessels, Kulenkampff & Co	8,500	
W. R. Grace & Co	24,000	
Various	46,500	101,300

SEPTEMBER 21.—By the *Mexico*=Tampico:

Madero Bros., Inc	*22,500	

SEPTEMBER 24.—By the *Magdalena*=Colon:

Caballero & Blanco	300	

SEPTEMBER 28.—By the *Esperanza*=Mexico:

Laurence Johnson & Co	1,500	

SEPTEMBER 28.—By the *Esperanza*=Tampico:

Madero Bros., Inc	*33,500	
D. L. Bietzfeld & Bros	*1,500	*35,000

SEPTEMBER 29.—By the *Colon*=Colon:

G. Amsinck & Co	4,000	
C. E. Griffin & Co	1,500	
Laurence Johnson & Co	8,500	
Pablo, Calvet & Co	6,000	
Strong & Trowbridge Co	7,000	
Fidanque Bros. & Co	600	27,600

SEPTEMBER 29.—By the *Santa Marta*=Colombia:

R. Del Castillo		2,500

SEPTEMBER 29.—By the *Saramacca*=Puerto Cortez:

Manhattan Rubber Mfg. Co	1,000	
G. Amsinck & Co	500	1,500

SEPTEMBER 29.—By the *San Jose*=Port Limon:

Isaac Brandon & Bros		1,000

SEPTEMBER 29.—By the *Malincke*=Mexico:

H. Marquardt & Co., Inc		4,500

OCTOBER 5.—By the *Morro Castle*=Mexico:

H. Marquardt & Co., Inc	700	
G. Amsinck & Co	300	1,000

OCTOBER 5.—By the *Matanzas*=Mexico:

Lawrence Johnson & Co		700

OCTOBER 5.—By the *Chelston*=Belize:

A. N. Rotholz		3,500

OCTOBER 5.—By the *Advance*=Colon:

Strong & Trowbridge Co	3,000	
Various	4,500	7,500

OCTOBER 5.—By the *Japanese Prince*=Bahia:

Adolph Hirsch & Co		50,000

OCTOBER 5.—By the *Morro Castle*=Tampico:

Madero Bros., Inc		*33,500

OCTOBER 8.—By the *Orotava*=Colon:

A. M. Capen's Sons	3,500	
Eastmond & Co	20,500	24,000

OCTOBER 9.—By the *Zacapa*=Cartagena:

A. Held	4,000	
G. Amsinck & Co	500	4,500

OCTOBER 10.—By the *Panama*=Colon:

G. Amsinck & Co	1,700	
Wessels, Kulenkampff & Co	1,600	
Camacho, Roldau & Van Sickel	1,200	
J. S. Sembrada & Co	1,000	5,500

OCTOBER 13.—By the *Monterey*=Tampico:

Federico Narro		*27,000

OCTOBER 14.—By the *Esparta*=Port Limon:

A. Held		1,000

OCTOBER 16.—By the *Asiatic Prince*=Bahia:

Adolph Hirsch & Co		22,500

OCTOBER 16.—By the *Mexico*=Tampico:

Madero Bros., Inc		*33,500

OCTOBER 19.—By *El Ouinte*=Galveston:

Various		*20,000

OCTOBER 26.—By the *Esperanza*=Tampico:

Federico Narro	*56,000	
Madero Bros., Inc	*56,000	*112,000

AFRICAN.

POUNDS.

SEPTEMBER 22.—By the *Zeeland*=Liverpool:

Meyer & Brown	140,000	
Arnold & Zeiss	22,500	162,500

SEPTEMBER 22.—By the *Minnewaska*=London:

Arnold & Zeiss		35,000

SEPTEMBER 24.—By the *New York*=Liverpool:

Rubber Trading Co		5,000

SEPTEMBER 25.—By the *Adriatic*=Liverpool:

Rubber Trading Co		40,000

SEPTEMBER 28.—By the *Philadelphia*=Liverpool:

General Rubber Co	4,500	
Various	4,500	9,000

OCTOBER 2.—By the *Cedric*=Liverpool:

General Rubber Co	33,500	
Meyer & Brown	2,200	35,700

OCTOBER 5.—By the *St. Louis*=Liverpool:

Henderson & Korn	9,000	
Arnold & Zeiss	2,000	11,000

OCTOBER 5.—By the *Minnetonka*=London:

Aldens' Successors, Ltd		45,000

OCTOBER 8.—By the *Secania*=Lisbon:

Arnold & Zeiss	26,000	
Various	138,600	164,600

OCTOBER 9.—By the *Celtic*=Liverpool:

Ed. Maurer	11,200	
Rubber Trading Co	4,500	15,700

OCTOBER 13.—By the *St. Paul*=Liverpool:

General Rubber Co	7,000	
Various	17,500	24,500

OCTOBER 14.—By the *Marquette*=London:

Charles T. Wilson		45,000

OCTOBER 16.—By the *California*=Bordeaux:

Various		22,500

OCTOBER 16.—By the *Baltic*=Liverpool:

Various		11,200

EAST INDIAN.

POUNDS.

[*Denotes plantation rubber.]

SEPTEMBER 21.—By the *City of Norwich*=Colombo:

Meyer & Brown	*54,000	
Rubber & Guayule Agency, Inc.	*63,000	
Arnold & Zeiss	*12,500	
W. R. Grace & Co	*12,500	
Johnstone, Whitworth & Co	*25,000	
Robinson & Co	*27,000	
Ed. Maurer	*30,000	
Henderson & Korn	*40,000	
Various	*100,000	*364,000

SEPTEMBER 21.—By the *St. Paul*=Liverpool:

Arnold & Zeiss		*35,000

SEPTEMBER 22.—By the *Minnewaska*=London:

Meyer & Brown	*95,000	
Rubber & Guayule Agency, Inc.	*28,000	
General Rubber Co	*180,000	
Michelin Tire Co	*22,500	
Johnstone, Whitworth & Co	*75,000	
Earle Bros.	*2,200	
General Electric Co	*16,000	
H. A. Astlett & Co	*5,600	
Ed. Maurer	*70,000	
Robinson & Co	*44,500	
Henderson & Korn	*67,000	
Charles T. Wilson	*190,000	
Hood Rubber Co	*33,600	
Rumsey & Greutert Co., Inc	*3,500	
Arnold & Zeiss	*100,000	
L. Littlejohn & Co	*50,000	
Henderson & Korn	*47,000	
Various	*410,000	*1,439,900

SEPTEMBER 22.—By the *Zeeland*=Liverpool:

Meyer & Brown	*16,500	
Various	*17,200	
Arnold & Zeiss	*112,000	*139,700

SEPTEMBER 24.—By the *Chicago*=Havre:

Various		*13,500

SEPTEMBER 28.—By the *Minnehaha*=London:

Meyer & Brown	*26,000	
Otto Isenstein	*95,000	
General Rubber Co	*110,000	
Ed. Maurer	*65,000	
L. Littlejohn & Co	*22,500	
Henderson & Korn	*86,500	
Robinson & Co	*25,000	
Maitland, Coppel & Co	*3,500	
Arnold & Zeiss	*120,000	
Rubber Trading Co	*4,500	
Charles T. Wilson	*125,000	
Johnstone, Whitworth & Co	*46,000	
Various	*310,000	*1,039,000

SEPTEMBER 30.—By the *Indra*=Singapore:

Meyer & Brown	*35,000	
Arnold & Zeiss	*75,000	
The B. F. Goodrich Co	*260,000	
Ed. Maurer	*33,500	
Johnstone, Whitworth & Co	*105,000	
Henderson & Korn	*42,500	
L. Littlejohn & Co	*100,000	
Ed. Boustead & Co	*11,200	
Ed. Maurer & Co	*12,500	
Various	*400,000	*1,074,700

OCTOBER 2.—By the *Cedric*=Liverpool:

Rumsey & Greutert Co., Inc		*33,500

OCTOBER 5.—By the *Minnetonka*=London:

General Rubber Co	*50,000	
Johnstone, Whitworth & Co	*38,000	
Earle Bros.	*2,200	
Robinson & Co	*22,500	
L. Littlejohn & Co	*200,000	
Ed. Maurer	*40,000	
Charles T. Wilson	*100,000	
The B. F. Goodrich Co	*560,000	
Various	*95,000	*1,107,700

OCTOBER 9.—By the *Kroonland*=Liverpool:

Various		*45,000

OCTOBER 9.—By the *Celtic*=Liverpool:

Rumsey & Greutert Co., Inc	*35,000	
Johnstone, Whitworth & Co	*1,100	*36,100

OCTOBER 13.—By the *St. Paul*=Liverpool:

Various		*30,000

OCTOBER 14.—By the *Samland*=London:

Arnold & Zeiss	*11,200	
Henderson & Korn	*8,000	
Charles T. Wilson	*90,000	
Ed. Maurer	*16,000	
Rumsey & Greutert Co., Inc	*22,500	
Johnstone, Whitworth & Co	*4,500	
Meyer & Brown	*2,200	
Various	*13,500	*167,900

OCTOBER 14.—By the *Marquette*=London:

Rubber & Guayule Agency, Inc.	*22,500	
Robinson & Co	*36,000	
Ed. Maurer	*180,000	
L. Littlejohn & Co	*105,000	
Henderson & Korn	*135,000	
General Rubber Co	*190,000	
Johnstone, Whitworth & Co	*90,000	
Arnold & Zeiss	*45,000	
Otto Isenstein	*11,200	
Charles T. Wilson	*25,000	
Various	*465,000	*1,304,700

OCTOBER 16.—By the *City of Durham*=Colombo:

Henderson & Korn	*30,000	
Robinson & Co	*36,000	
Johnstone, Whitworth & Co	*80,000	
C. W. Mackie	*30,000	
Rumsey & Greutert Co., Inc	*7,000	
Rubber & Guayule Agency, Inc.	*7,000	
Meyer & Brown	*132,000	
Various	*25,000	*347,000

OCTOBER 19.—By the *Minnewaska*=London:

Meyer & Brown	*14,500	
Rubber Trading Co	*8,000	
Henderson & Korn	*32,000	
Arnold & Zeiss	*4,500	
Ed. Maurer	*110,000	
Johnstone, Whitworth & Co	*65,000	
Charles T. Wilson	*85,000	
Robert Badenhop	*3,000	
Rubber & Guayule Agency, Inc.	*7,000	
Robinson & Co	*7,000	
General Rubber Co	*350,000	
L. Littlejohn & Co	*65,000	
Rumsey & Greutert Co., Inc	*11,200	
The B. F. Goodrich Co	*250,000	
Various	*335,000	*1,347,200

OCTOBER 23.—By the *Indrakuala*=Singapore:

Meyer & Brown	*51,500	
Arnold & Zeiss	*67,000	
L. Littlejohn & Co	*56,000	
Ed. Boustead	*45,000	
Henderson & Korn	*130,000	
Johnstone, Whitworth & Co	*20,000	
W. Stiles	*16,000	
Ed. Maurer	*22,500	
Various	*265,000	*673,000

OCTOBER 26.—By the *Kafne*=Colombo:

Meyer & Brown	*190,400	
Rubber & Guayule Agency, Inc.	*25,000	
Henderson & Korn	*13,500	
Various	*130,000	*358,900

OCTOBER 26.—By the *Philadelphia*=Liverpool:

Aldens' Successors, Ltd		*28,000

OCTOBER 26.—By the *Minnehaha*=Liverpool:

Aldens' Successors, Ltd		*8,000

CUSTOM HOUSE STATISTICS.

PORT OF NEW YORK—SEPTEMBER, 1914.

Imports:	Pounds.	Value.
India rubber	13,827,986	$6,607,840
Balata	315,215	149,758
Guayule	181,276	40,882
Gutta percha	36,493	6,488
Gutta jelutong (Pontianak)	471,079	19,184
Total	14,832,049	$6,824,152
Exports:		
India rubber	169,127	$109,244
Balata	98,103	50,687
Rubber scrap, imported	393,661	29,046
Rubber scrap, exported	169,507	14,153

BOSTON IMPORTS IN SEPTEMBER, 1914.

	Pounds.	Value.
India rubber	236,708	$118,271
Gutta percha	65,960	10,420
Gutta jelutong	764,051	49,439

THE RUBBER SCRAP MARKET.

AT the beginning of the month of October dealers were operating to a fairly large extent in boots and shoes at 6½ to 6¾ cents. Mills were not large purchasers, but were paying 7 cents for their requirements, while in some cases they paid 7⅛; some sales being reported even at 7¼ cents under special circumstances.

By the middle of the month a somewhat better tone prevailed, large dealers being willing to give about 6¾ cents, and the business with mills being done at 7⅛ to 7¼ cents. Some dealers claimed to have been able to buy under 6¾ cents, but any such transactions did not affect the market generally.

Towards the close of the month a slightly less active tone prevailed; mills offering only 7 cents, but being obliged in some cases to pay 7¼ cents. Some dealers, who were desirous of reducing stock, sold at 7 cents.

Auto. tires were weak at the opening of the month, buyers only operating to a limited extent, but paying 4¾ cents. Dealers were not disposed to pay over 4¼ cents. Later in the month, mixed lots of tires were sold by dealers at 4½ to 4¾ cents, while reclaimers needing a special grade were disposed to pay good prices. Dealers could not purchase tires at prices allowing of sales under 4⅝ cents. In the closing week they were able to buy at 4⅛ cents.

Sales of inner tubes between dealers were effected, it is said, for No. 1 at 20 cents, while the best price consumers were willing to pay was 22 to 23 cents. For No. 2 dealers were not disposed to offer more than 10½@11 cents. For boots and shoes large Philadelphia dealers are offering to collectors 6⅝ and selling to reclaimers at 7 cents. The prices offered for mechanical rubber scrap have been speculative, owing to uncertainty as to disposal of the merchandise.

At Boston dealers obtained for boots and shoes from 7 to 7¼ cents, paying 6½ to 6⅝ cents. Auto, tires and inner tubes are depressed, owing to lack of demand.

RUBBER SCRAP PRICES PAID BY CONSUMERS FOR CARLOAD LOTS.

New York, October 30, 1914.

	Per Pound.
Boots and shoes.....*cents*	6¾@ 7
Trimmed arctics	4½@ 4¾
Automobile tires	4⅜@ 4⅝
Solid tires	4¼@
No. 1 inner tubes	21 @22
No. 2 inner tubes	11½@12½
Red tubes	13 @13½
Bicycle tires	2¾@ 3
Irony tires	1¾@ 2¼
Mixed auto. peelings	6¾@ 7
No. 1 auto. peelings	8¼@ 9¼
Mixed white scrap	7¼@ 7¾
No. 1 white scrap	10¼@10¾
No. 1 soft white rubber	10¼@
White wringer rubber	6¼@
No. 1 red scrap	9¼@
Mixed red scrap	6¼@
Mixed black scrap	2¼@
Rubber car springs	3¼@
Horse shoe pads	2¼@ 2¾
Matting and packing	½@ ¾
Garden hose	5⅛@
Air brake hose	2¾@
Cotton fire hose	1¾@

The Leicester Rubber Co., of Catasauqua, Pennsylvania, has been petitioned into bankruptcy, with liabilities of $49,716 and assets of $28,560. This company, which purchased cheaper grades of scrap rubber, was formerly located at Trenton, New Jersey, moving to Catasauqua about a year ago. Its plant was destroyed by fire on July 19.

FORMER JUNK CLASSIFICATION RESTORED

The National Association of Waste Material Dealers has been instrumental in the restoration of the railroad classification of junk. New provisions will be incorporated in classification No. 53, which will deal with scrap rubber, including worn out rubber tires. Much appreciation has been expressed of the efforts so successfully made by the Western Traffic Committee of the above association, in the interest of the trade, for revisions of classifications and rates. The committee includes Albert Birkenstein, of S. Birkenstein & Sons, Chicago, and Ed. Friedlander, of the Loewenthal Co.'s Chicago office.

The committee appointed by the National Association of Waste Material Dealers met at Chicago on October 8, to discuss recommendations to be made to the Felt Makers' Association. These will be dealt with at the next meeting of the felt manufacturers. Messrs. Louis and Milton Birkenstein, of S. Birkenstein & Sons; S. Kahn, of M. Kaufman, and Milton Loewenthal, of the Loewenthal Co., formed the committee.

PANAMA SCRAP HOSE.

A further sale of scrap hose by the Panama Canal Commission took place on October 19, when the following were among the successful bidders: S. Birkenstein & Sons, 10,151 lbs. air and signal hose, 2.91c.; H. Muehlstein & Co., 19,551 lbs. steam, water and pneumatic hose, 45c. per cwt.; The Loewenthal Co., 8,611 lbs. fire and washout hose, etc., 1.87½c.; Atlantic Manufacturing Co., Wilmington, 4,332 lbs. sleeves, 1⅛c.; Oppenheimer & Co., 18,819 lbs. armored and wire-inserted hose, 20c., and The Loewenthal Co., 9,100 lbs. suction hose, 30c.

Complaints have been received of Chinese rubber shoes having been offered to members of the waste trade at the regular prices current for American shoes. As the value of these Chinese shoes is understood to be about 1c. per pound, cautious investigation is recommended of any such offers.

The incorporation has been announced of B. Levi & Co., waste material dealers, at Scranton, Pennsylvania, with a capital stock of $20,000. It is stated that the incorporators are David Levi, Rica Levi and L. L. J. Levi.

REAR SIGNAL IN TURNING OR STOPPING AUTOMOBILES.

The old-time method of stretching out the hand to indicate that the driver of an automobile is about to turn in one direction or the other or to stop his car is likely to be displaced by an automatic rear signal lamp, as shown in the cut herewith. This lamp consists of three small bulbs mounted in a black finished aluminium base, each unit being made up of a vulcanized rubber socket containing a specially made tungsten bulb and reflector. These bulbs are said to consume only about one-third the amount of current needed for the standard lighting equipment and may be operated on dry batteries if desired. The signals are operated by self-contained waterproof contact devices attached to the steering gear and clutch pedal. The turning of the steering wheel to the right or left automatically moves an arrow in the corresponding lamp, indicating in which direction the car will proceed, and the throwing out of the clutch which precedes stopping causes the word "Stop" to appear in red letters in the center lamp. [H. W. Johns-Manville Co., New York.]

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NEW YORK CHEMICAL QUOTATIONS.

October 30, 1914.

Aluminum flake ... *lb.*	1½c.@		
Antimony, crimson, sulphuret of ... *lb.*	.33	@	.39
Antimony, golden, sulphuret of ... *lb.*	.25	@	.28
Arsenic sulphide ... *lb.*	.12	@	
Asbestine ... *ton*	$16.00	@	$18.00
Barytes, carbonate domestic ... *ton*	21.35	@	
Barytes, carbonate, imported ... *ton*	19.00	@	23.00
Barytes, carbonate, domestic ... *ton*	17.00	@	19.00
Beeswax, crude yellow ... *lb.*	.30	@	.32
Benzol 90 per cent ... *lb.*	.30	@	
Black hypo ... *lb.*	.26	@	
Blanc fixe ... *lb.*	.03⅞	@	
Cadmium yellow ... *lb.*	1.25	@	1.50
Carbon bi-sulphide ... *lb.*	.9½	@	.12
Carbon tetra-chloride, drums ... *lb.*	.14	@	.16
Ceresin wax, white ... *lb.*	.15	@	.25
China clay, domestic ... *ton*	8.00	@	9.00
Coal tar naphtha ... *gal.*	.28	@	
Fossil flour ... *ton*	35.00	@	
Glycerine, C. P., bulk ... *lb.*	.24	@	.25
Graphite ... *lb.*	.40	@	.60
Green oxide of chromium ... *lb.*	.35	@	
Iron oxide ... *lb.*	.02	@	.10
Infusorial earth ... *ton*	35.00	@	
Lampblack ... *lb.*	.03¾	@	.07
Lead, sublimed white ... *lb.*	.07	@	
Lead, white (basic carbonate) ... *lb.*	.05	@	.05¼
Lead, white (basic sulphate) ... *lb.*	.04¾	@	.05
Linseed oil, carload ... *gal.*	.44	@	
Litharge ... *lb.*	.05	@	.05¼
Lithopone, American ... *lb.*	.03¾	@	.04
Magnesia, calcined, domestic ... *ton*	28.50	@	29.50
Magnesite, calcined, powder ... *ton*	30.00	@	35.00
Naphtha, V. M. & P., deodorized ... *gal.*	.09	@	
Naphtha, 70 deg ... *gal.*	.23	@	
Naphtha, 76 deg ... *gal.*	.26	@	
Orange mineral, domestic ... *lb.*	.07½	@	.08½
Ozokerite, refined yellow ... *lb.*	.25	@	.30
Paraffine wax, domestic 120 m. p. ... *lb.*	.04½	@	.04¾
Pumice stone, powder ... *lb.*	.01½	@	.02
Prussian blue ... *lb.*	.46	@	.48
Rape seed oil, blown ... *gal.*	.78	@	.80
Red oxide, domestic ... *lb.*	.05½	@	.6
Rosin oil ... *gal.*	.25	@	
Shellac, fine orange ... *lb.*	.16	@	.18
Soapstone, powdered ... *ton*	10.00	@	12.00
Sulphur chloride, in drums ... *lb.*	.7½	@	.08
Talc, American ... *ton*	10.00	@	20.00
Ultramarine blue ... *lb.*	.03½	@	.13
Vermilion Chinese ... *lb.*	.90	@	1.00
Whiting, commercial ... *cwt.*	.55	@	
Whiting, Paris white ... *cwt.*	.75	@	
Whiting, English cliffstone ... *cwt.*	1.00	@	
Zinc oxide, American process ... *lb.*	.05⅝	@	
Zinc oxide, French process, red seal ... *lb.*	.07	@	
Zinc oxide, French process, green seal ... *lb.*	.07½	@	
Zinc oxide, French process, white seal ... *lb.*	.08	@	

ENGLISH INQUIRY FOR CARBON TETRA-CHLORIDE.

In an inquiry which recently appeared in an English publication for carbon tetra-chloride this statement was made: "Up to the present time we understand that the manufacture of this commodity has been exclusively confined to Germany."

As a matter of fact there has been a flourishing American industry in this line for more than ten years. It is a by-product of the electrolytic decomposition of salt, which is a large industry in this country.

BATAVIA RUBBER EXHIBITION

The "Ceylon Observer" of September 4 states that on September 3 a telegram was received by Kelway Bamber in that city from the Commissioner-General of the Batavia Rubber Exhibition, which said: "Opening 19th October."